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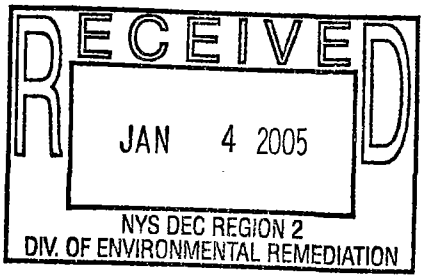

FOR

DEXTER CHEMICAL LLC
845 EDGEWATER ROAD
BRONX, NEW YORK

VOLUME I
GENERAL MANUAL

COMPILED BY

THE WHITMAN COMPANIES, INC.

DECEMBER 2005

116 Tices Lane, Unit B-1, East Brunswick, NJ 08816
www.whitmanco.com

OM & M MANUAL
VOLUME I

DRAFT

DEXTER CHEMICAL LLC
845 EDGEWATER ROAD
BRONX, NEW YORK

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OM & M MANUAL
VOLUME I

DEXTER CHEMICAL LLC
845 EDGEWATER ROAD
BRONX, NEW YORK

1.0 INTRODUCTION

Dexter Chemical LLC (Dexter) is submitting this operation, maintenance and monitoring (OM&M) plan, Volumes I, II and III, under the December 4, 2003 Voluntary Cleanup Program Agreement (VCA) between Dexter and the New York State Department of Conservation (NYSDEC). This OM&M plan is being submitted in accordance with the approved February 2004 Remedial Action Work Plan (RAW) for the site which was approved by NYSDEC on November 3, 2005.

This OM&M plan presents a scope of work to implement operations maintenance and monitoring activities for the approved air sparging and soil vapor extraction (AS/SVE) remedy for Area A and Area I at the site (Figure 2). An AS/SVE pilot test conducted in Area A in June 2004 indicated that AS/SVE was a viable remedial option for the site. This OM&M Plan has been completed consistent with the requirements of section 6.2 of the DRAFT Technical Guidance for Site Investigation and Remediation (DER-10), December 2002.

2.0 SITE DESCRIPTION

The site is located at 819-845 Edgewater Road and 810-842 Whittier Street, Bronx, New York. The facility consists of six (6) buildings owned by Dexter Chemical Corporation on approximately two (2) acres. The property is located in an industrial/manufacturing district of Hunts Point, Bronx, New York. Industrial facilities are located north and south of the property. A scrap metal yard is located to the east and residential apartments and a sheet metal company are located west of the subject property.

The site location on the U.S.G.S. Central Park Quadrangle is indicated on Figure 1. A site map showing November 1997 and March 1998 soil and ground water sample locations is included as Figure 2. The site is located on a flat coastal peninsula. The estimated elevation is between 20 and 25 feet above mean sea level. The nearest surface water body is the Bronx River, located approximately 1,000 feet east of the site. Ground water was encountered between 2 to 12 feet below grade, across the site.

The regional geology in the vicinity of the site is of Paleozoic Era, Ordovician System consisting of shale and limestone, stratified sequence and Manhattan Formation with undivided pelitic schists, and amphibolite.

The soil encountered at the site through sampling activities generally consists of fill material historically placed to raise the topographic elevation of the property to its current grade. The fill material included silty soil, some sand and clay, cinders, coal fragments, gravel and debris (concrete, glass, wood, and brick fragments). This material can be classified as historic fill which can contain Polynuclear Aromatic Hydrocarbons (i.e. Benzo(a)pyrene, Benzo(b)fluoranthane, Dibenz(a,h)anthracene) and Priority Pollutant Metals. A distinct organic layer described as meadow mat by the field geologist was encountered at 13 to 16 feet. This layer is indicative of native soil for the area.

3.0 SITE REMEDIAL ACTION

3.1 Description of Remedial Action

As described in the Whitman Remedial Action Workplan May 2005, a joint Air Sparge/Soil Vapor Extraction (AS/SVE) system will be used to remediate soils in both Area A and Area I. The system will include a blower, knockout pot (KO), Off-gas treatment device, a liquid transfer pump, and liquid granular activated carbon (GAC) units.

The SVE blower will create a vacuum which will be applied to the designated extraction locations in both area A and Area I. This vacuum will create a zone of influence extracting volatile organic vapors from the soils and into the SVE piping. The soil vapor/air stream will flow through a KO pot prior to entering the blower and off-gas treatment system. The condensate will precipitate out through a pressure drop and collect on the bottom of the KO pot until a predetermined high level is reached. At high level a float switch will activate the transfer pump to remove the water from the KO Pot and transfer it to the two GAC units in series, and then into the sanitary sewer. The air stream will pass through the blower unit, and then through the off-gas treatment system (two carbon vessels in series or a catalytic oxidizer) prior to being discharged to the atmosphere.

An air sparging (AS) system will be installed to treat the saturated zone. The AS will volatize the contaminants in the saturated zone to the unsaturated zone where they can be extracted by the SVE system. The AS system will include a rotary valve air compressor, adjusting valves, and pressure relief valves. The system will also be connected to the interlock

which will shut down the system in the event of high temperatures or pressures, or the shut down of the SVE system.

3.2 Goals of Remedial Action

The primary remedial objective for the site is to remove as much contamination as necessary to ensure that the concentrations of residual contamination are low enough to be protective against actual impacts to human health and the environment. As demonstrated during the pilot study, it is anticipated that the proposed Soil Vapor Extraction/Air Sparging (SVE/AS) system will be very effective at removing the volatile BTEX compounds and moderately effective at removing the less volatile chlorinated benzene compounds.

4.0 SAMPLING ANALYSIS

4.1 Monitoring Plan

This monitoring plan describes the measures that will be taken to monitor the performance and effectiveness of the remedy at the site. Performance monitoring is the regular assessment of physical and chemical parameters, to determine if the remedy is performing as designed. Effectiveness monitoring is the periodic chemical and physical analysis of ground water, soil and air to determine and/or confirm that the objectives of the remedy are being achieved.

4.2 Environmental Effectiveness Monitoring

4.2.1 General

Effectiveness monitoring will include the collection of ground water and soil samples to assess conditions in the vicinity of the remediation. SVE influent air sampling, pressure readings, vacuum readings, water table elevations, and estimated mass removal rates will be used to monitor the effectiveness of the AS/SVE system. The effectiveness monitoring will be collected monthly and reported quarterly to the NYSDEC. In addition ground water sampling will be conducted to monitor system effectiveness.

4.2.2 Sampling Program

Ground water sampling will be conducted on a semi-annual basis from sample points PZ-4, MW-6, and GW-3 in Area A, and MW-7 in area I. Samples will be collected in accordance to

NYSDEC Analytical Services Protocol (ASP). Field analysis will be conducted for ground water pH, temperature, conductivity and dissolved oxygen.

SVE influent air samples will be collected monthly and analyzed for VO+10. KO pot discharge will be sampled between carbon vessels and after the final carbon vessel monthly for VO+10. Sample results will be used to determine the carbon change-out schedule, and to ensure only acceptable contaminant levels are entering the sewer system.

Upon determination that the SVE system operations should cease, soil and ground water samples will be collected to verify the effectiveness of the remediation. The soil samples will be collected from the following locations:

Area A	**Area I**
• A-104 (7-8')	• A1SB-17A (5.5-6')
• A-101 (7-8')	• A1SB-10A (7-7.5')
• A-105A (7-8')	• I-1 (7.5-8')
• 1SB-1 (7-9')	• A1SB-1B (10.5-11')
• 1SB-3 (7-8')	• A1SB-14 (7.5-8')
• A-102A (7-8')	• I-104 (7-8')

Soil sampling will be performed in accordance with NYSDEC Sampling Guidelines and Protocols (September 1992). Soil samples for laboratory analysis will be collected using a direct push sampling device such as GeoProbe. Samples will be collected directly from the acetate-lined, stainless steel probe. Acetate liners will be disposed of after each use and the stainless steel probes will be decontaminated following standard procedures.

At each location, the sample core will be screened using a photoionization detector (PID) in six-inch intervals and the soil type will be recorded. Soil samples will be collected at the predetermined depths summarized above.

Groundwater samples will be collected from the following locations:

- PZ-4
- MW-6
- GW-3
- MW-7

Samples will be collected from each well and analyzed for VO+10, including the site-specific chlorinated aromatics. Field analysis will be conducted for ground water pH, temperature, conductivity and dissolved oxygen.

All soil and ground water samples will be analyzed by a New York State Department of Health (NYSDOH) ELAP CLP certified laboratory.

4.3 On-Site Treatment Plant Performance Monitoring

The site performance monitoring will include the following elements:

- Estimate of the area and volume of the soil and ground water being treated;
- Sampling of the influent and effluent air and water streams;
- Measurement of water levels in site monitoring wells;
- Estimate of mass removal rates; and
- Evaluation of the performance monitoring in order to make recommendation for system adjustments as necessary.

The performance monitoring for each phase of the remediation (start-up, operation and shutdown) are described in the following sections.

4.3.1 System Startup Phase

The startup phase will begin with the startup of the SVE system. This phase will include approximately 7-10 days of manifold valving adjustments. These adjustments will be used to optimize contaminant mass removal by increasing vacuum pressure on the wells/horizontal lines producing the highest contaminant concentrations. During this period, flow measurements vacuum readings and vapor concentrations will be recorded daily from each extraction well line from the manifold and from the effluent.

After the SVE system is optimized, the air sparging system will be started. AS startup will continue for an additional 7-10 days of valving adjustments. During this period, injection and extraction rates, pressures, depth-to-water and vapor concentrations will be monitored hourly at first and then daily. Other startup monitoring will include visual observation for water bubbling and indoor vapor concentrations.

Based on the pilot study results, initial AS air pressure and flow will be introduced at 1 scfm per well at 5 psi. The low flow rate is necessitated by the observation of bubbling water and odors at higher flow rates during the pilot study. If any bubbling is observed in monitoring

points or if any noticeable odors or VOC vapors are detected in the ambient air (see Section 6.1.2), the air pressure and flow will be reduced until the detection effects are eliminated.

4.3.2 Operational Phase

Performance monitoring will be conducted on a monthly basis to assure it is working properly, evaluate the vapor recovery rate, and determine when system shut-down post-remedial sampling should be performed. The following performance indicators will be collected monthly:

- Air sparging and extraction flow rates.
- Sparging pressure and vacuum reading from venting monitoring points and manifold.
- Laboratory analysis of the extracted vapor stream for VO+10.
- Field monitoring of vapor concentrations in venting monitoring points and effluent discharge using a Photo Ionization Detector (PID) or a Flame Ionization Detector (FID).
- Estimated mass removal rates.
- Estimated cumulative VOC mass removed.
- Scaled site plans with vacuum pressures and monitoring point vapor concentrations.
- Changes in water table elevations.
- Estimated zone of influence for SVE and AS wells.

Results of the AS/SVE effectiveness monitoring will be reported on a quarterly basis to the NYSDEC.

4.3.3 Endpoint and Shutdown Phase

The system monitoring data will be reviewed to determine the effectiveness of the AS/SVE system and determine when the system operation should cease. Information reviewed will include the system performance monitoring data, VOC removal rates over time and contaminant distribution in vent gas over time. When asymptotic behavior is observed in the cumulative mass removal and effluent VOC concentrations, the following actions will be undertaken to increase mass removal:

- Adjusting flow and vacuum rates to wells with higher concentrations
- Pulse the system with periodic shutdowns

When asymptotic behavior persists for a period of three months following these actions, the system will be shut down. A proposal to shut the system down will be submitted to NYSDEC with the next regularly scheduled monthly progress report.

4.4 Analytical Program

All field activities will follow the NYSDEC Sampling Guidelines & Protocols (September 1992).

4.4.1 Field Instruments

The PID will be calibrated with known gas concentrations daily in the field. In the event that the instrument fails to meet calibration procedures, a replacement will be obtained.

4.4.2 Sample Custody

Field measurements and sample locations will be recorded. Following the sample collection, the sample will be labeled and stored in a laboratory provided cooler. The samples will be delivered by Whitman personnel or laboratory courier to the laboratory under a chain-of-custody.

4.4.3 Analytical Parameters and Methods

Soil and ground water samples will be analyzed for the parameters outlined in Section 6.2 using the following methods:

Parameter	Analysis Method
VOCs	EPA Method 8021

4.4.4 Laboratory Certification and Data Format

Soil and ground water sample analyses will be performed by STL, Edison, New Jersey, NYSDOH accredited laboratory ELAP/CLP #11452. The laboratory will provide NYSDEC Analytical Services Protocol (ASP) Category B deliverables.

4.5 Evaluation of Monitoring Results

Historic monitoring data in the Whitman Remedial Action Workplan May 2005 submitted to the NYSDEC, Dexter presented a table attached as Tables 1 - 3.

The historic monitoring data will be used as a base point to evaluate the effectiveness of the AS/SVE treatment system. All sampling results will be evaluated in relation to the historic

sampling results to determine if the concentrations show a clear downward trend, or no statistically discernable trend. This trend will be used to determine the AS/SVE system's effectiveness, and if additional remedial measures are required.

Ground water samples will be collected as per the OM & M sampling program for the duration of the treatment systems operation plus eight (8) additional quarters to establish a trend. Samples will be analyzed for Benzene, Toluene, Ethyl benzene, Xylenes (BTEX), and Volatile Chlorinated Benzene Compounds. The sampling frequency for all wells will be quarterly. If at any time during the monitoring period the remedy is found to be ineffective, the NYSDEC may require additional remedial action.

SVE influent air samples will be collected monthly and used to estimate the cumulative VOC removal. In addition the results will be used to determine when flow an vacuum rates need to be adjusted, to pulse the system with periodic shutdowns, or when the results warrant a proposal to the NYSDEC to shut down the system.

5.0 SITE MAINTENANCE

5.1 Maintenance Activities

System maintenance/site inspection will be conducted on a monthly basis by the site technician. During the inspection/maintenance visit the employee will conduct the following activities:

- Check the treatment shed door and lock to ensure proper operation.
- Check and replace when necessary all posted warning signs.
- Ensure the emergency contacts/contact numbers are correct and updated when necessary.
- Check any replace light bulbs when necessary.
- Check all emergency shut off devices and clean/repair when necessary.
- Conduct general housekeeping of work area.
- Look for air/water leaks and repair piping when necessary.
- Grease fitting on SVE Blower.
- Check all belts for correct tightness and adjust/replace when necessary.
- Check water traps and bail when necessary.
- Check and replace Total Suspended Solids (TSS) filter when necessary.
- Clean and check proper operation of flow meter.
- Check all PSI/Vacuum gauges and replace when necessary.

- Check all floats and high water shutoffs for proper operation.
- Check monitoring wells for proper seals and security.

5.2 Inspections and Maintenance

5.2.1 Operating Records

Operating records will be kept in a waterproof sleeve and visible at first entrance into the treatment shed. The system operating log will include the following:

Liquid Phase

- Ground water discharge rate (gpm) and total flow into carbon
- GAC pressure readings
- Date of last carbon change
- TSS pressure readings before/after change out

AS/SVE

- AS system pressure readings
- SVE system influent cfm reading
- SVE system vacuum at influent port
- Total VOC influent concentration (PID/FID).
- Total Effluent concentration (PID/FID).
- Calculated percent efficiency of off-gas treatment
- System influent/effluent temperatures (Catalytic Unit)
- Date of last carbon change (if applicable)
- Test Air Sparge Interlock

In addition, a log book will be kept on site which will be signed and dated at each visit. Each technician will describe the system's condition on arrival and departure, weather conditions, service and/or repairs done to the system, and make note of any unusual conditions at the site.

5.2.2 Monthly Check List

The monthly check list will include all maintenance/site inspection activities listed in section 5.1. The check list will be completed, dated and signed by the designated technician. Completed check lists will be stored in a binder on site.

5.2.3 Quarterly Check List

The quarterly check list will include all activities listed in the monthly check with the addition of the following:

- Service blower as per manufacture's specifications
- Use amperage meter to test draw on blower and adjust system vacuum if necessary
- Test system starter motors by pushing the test button to ensure they will trip in the event of an overload
- Check integrity and tightness of all electrical wiring

5.2.4 Yearly Check List

The yearly check list will include all activities in the quarterly checklist. In addition the technician will review all records from that year to ensure that all records are complete and accurate. After review the technician will add any necessary activities to the monthly, quarterly, and annual check lists.

5.3 Preventative Maintenance Schedules

System maintenance will be conducted on a monthly basis during the site visit. Any additional maintenance time will be scheduled as needed.

5.4 Disposal of Spent Carbon

Spent carbon from the off-gas treatment and liquid phase treatment systems will be removed and sent for recycling at permitted reactivation facility. Documentation of proper disposal will be kept on file and available for review at the request of the NYSDEC.

6.0 REPORTS

Dexter will provide sampling and system monitoring reports to the NYSDEC in quarterly monitoring reports.

Site Evaluation Reports will be provided annually following the quarter when annual samples are taken. Each annual report will also contain an updated ground water contour map.

Proposals for modifying sampling frequencies will be made in Progress Reports or Annual Reports as appropriate.

Recipients of the reports will be as follows:

Original:

Hari O. Agrawal, P.E.
New York State Department of Environmental Conservation (NYSDEC)
Division of Environmental Remediation, Region 2
47-40 21st Street
Long Island City, NY 11101

Duplicate:

Rosalie K. Rusinko, Esq., NYSDEC
Daniel C. Walsh, Ph.D., NYSDEC
Gary Litwin, NYSDOH

7.0 CITIZEN PARTICIPATION

The NYSDEC received no comments during the public comment period (August 15, 2005 to September 14, 2005) for "Public Comments Requested on the Remedial Action Work Plan for Dexter Chemical. LLC, Bronx, NY" (Attachment 1). A letter of approval dated November 3, 2005 was issued by the NYDEC for the Dexter Chemical Remedial Action Work Plan: For Soil and Ground water at Area "A" and Area "I" (Attachment 2).

Dexter will periodically undertake the preparation and distribution of a fact sheet to adjacent property owners and other interested groups as determined necessary by the NYSDEC.

8.0 PERSONNEL

All remedial system technicians will be trained in the standard field operating procedures stated in this manual in accordance with Whitman policy. Upon the completion of all required training the qualified system technician will report directly to the project manager.

All Whitman employees will receive safety training, be OSHA 40 hour certified, and maintain current OSHA 8 hour refresher certification.

8.1 Material Safety Data Sheets

Material Safety Data Sheets (MSDS) can be found in Attachment 3.

9.0 HEALTH AND SAFETY PLAN

The Health and Safety Plan for Dexter Chemical LLC, Bronx, NY can be found in Attachment 4.

10.0 RECORDS AND FORMS

See Volume III, Part II.

11.0 EMERGENCY CONTINGENCY PLAN

The SVE/AS treatment system will have automatic emergency shut offs. The SVE blower will automatically shut down if the preset high temperature shut off level is reached. The AS system will be equipped with an interlock which will not allow the sparge compressor to run independent of the SVE blower. In addition, the AS will also have a high pressure relief valve. If any unusual noise or odor is encountered a designated Dexter Chemical employee will immediately shut down the treatment system and contact Whitman.

The ground water treatment system will be checked weekly for leaks or high pressure readings. If at any time a leak or high pressure readings is detected a Dexter employee will immediately shut down the SVE/AS and ground water treatment system and contact Whitman. If leak occurs prior to carbon treatment personnel in the area of the spill will:

- Shut down the treatment system
- Inform the Site Supervisor and Whitman immediately
- Determine if adequate protective equipment is available to enter the area of the spill
- Get spill kit materials
- Identify the source of the spill
- Contain, absorb and recover spilled ground water in proper containers

- Dispose of spilled materials properly, according to local, state and federal regulations

A 24 hour emergency contact number for Whitman, as well as Dexter Chemical LLC, will be visibly posted on the security fence surrounding the treatment system.

Emergency phone numbers, map, and directions to the nearest hospital can be found in the site Heath and Safety Plan for Dexter Chemical LLC, Bronx, NY (Attachment 3).

TABLES

TABLES

TABLE 1A

Dexter Chemical, L.L.C.
Historic Summary of Volatile Organic Results for Soil
AEC-A

Sample ID Lab Sample Number Sampling Date Sample Depth (feet) Units	1994 NYSDEC Rec. Soil Cleanup Objective ug/kg	ISB-1 32211 11/18/97 7-9' ug/kg	ISB-2 32213 11/18/97 7-8' ug/kg	ISB-3 33215 11/18/97 7-8' ug/kg	A-1 48923 03/10/98 4-6 ug/kg	A-1 48925 03/10/98 20-21 ug/kg	MW-6 49339 3/12/1998 7-8 ug/kg	A-100 218846 07/21/00 4-5 ug/kg	A-101 218847 07/21/00 7-8 ug/kg	A102A 218856 07/21/00 7-8 ug/kg	A-102B 218857 07/21/00 14-15 ug/kg	A-102D 218859 07/21/00 19-20 ug/kg	A-103A 218860 07/21/00 6-7 ug/kg	A-104A 218848 07/21/00 7-8 ug/kg	A-104B 218849 07/21/00 14-15 ug/kg	A-104C 218850 07/21/00 19-29 ug/kg	A-105A 218851 07/21/00 7-8 ug/kg	A-105B 218852 07/21/00 14-15 ug/kg	A-105C 218853 07/21/00 19-20 ug/kg
VOLATILE COMPOUNDS																			
Chloromethane	1900	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	36	ND	ND	ND	ND	ND	ND	12
Bromomethane	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Vinyl Chloride	200	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chloroethane	1900	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.7 J	ND	ND	ND	ND
Methylene Chloride	6000	ND	ND	ND	ND	1.1	ND	1.3 J	ND	ND	ND	6.7 J	ND	ND	ND	ND	ND	ND	4.1
Trichlorofluoromethane	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1-Dichloroethene	400	ND	ND	ND	ND	ND	ND	0.7 J	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1-Dichloroethane	200	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
trans-1,2-Dichloroethene	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
cis-1,2-Dichloroethene	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chloroform	300	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	70 J	ND
1,2-Dichloroethane	100	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1,1-Trichloroethane	800	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Carbon Tetrachloride	600	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Bromodichloromethane	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichloropropane	NS	ND	ND	ND	ND	ND	ND	2.6	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
cis-1,3-Dichloropropene	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Trichloroethene	700	ND	ND	ND	ND	ND	ND	0.8 J	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Dibromochloromethane	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1,2-Trichloroethane	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Benzene	60	ND	ND	ND	**430**	ND	ND	ND	ND	ND	ND	4.7	ND	ND	0.8 J	ND	ND	ND	ND
trans-1,3-Dichloropropene	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2-Chloroethyl Vinyl Ether	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Bromoform	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Tetrachloroethene	1400	ND	ND	ND	ND	ND	ND	1.2	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1,2,2-Tetrachloroethane	600	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Toluene	1500	ND	ND	ND	360	3	ND	1.0 J	**28,000**	ND	ND	89	230 J	ND	1.7 J	1,200 J	**15,000 J**	260 J	100
Chlorobenzene	1700	ND	ND	**260,000**	**7,200** *	ND	ND	ND	ND	ND	390 J	ND	ND	ND	ND	ND	ND	ND	ND
Ethylbenzene	5500	3,100	ND	**19,000**	3,200	1	ND	ND	**49,000**	**5,900 J**	100 J	5.9 J	2,600	5,000 J	1.6 J	ND	**58,000**	400 J	8.6
Xylene (Total)	1200	**26,000**	ND	**79,000**	**25,000** *	2	ND	0.7 J	**450,000**	**29,000**	**2,700**	22	**12,000**	**17,000**	12	ND	**410,000**	**3,000**	32
Total Confident Conc.		29,100	0	358,000	36,190	8	0	8.3	527000	34900	3190	164.3	14830	22000	17.8	1200	483000	3730	156.7
Total Estimated Conc. VOA TICs		1,809,000	1,218,000	3,030,000	1,710,000	42	46,800	6.6	7,920,000	2,240,000	252,000	1,114	382,300	3,670,000	249	0	6,340,000	21,020	1,134

- Exceeds NYSDEC Soil Cleanup Criteria
NS - No Standard for Individual Contaminant
ND - None Detected
TIC - Tentatively Identified Compounds
J - The result is less than detection limit, but greater than zero

TABLE 1B

Dexter Chemical, L.L.C.
Historic Summary of Base Neutral Organic Results for Soil
AEC-A

Sample ID	1994 NYSDEC	ISB-1	ISB-2	ISB-3	A-1	MW-6	A-100	A-101	A-102A	A-102B	A-102D	A-103A	A-104A	A-104B	A104-C	A-105A	A-105B	A-105C
Lab Sample Number	Rec. Soil	32211	32212	33214	48923	49339	218846	218847	218856	218857	218859	218860	218848	218849	218850	218851	218852	218853
Sampling Date	Cleanup	11/18/97	11/18/97	11/18/97	03/10/98	3/12/1998	07/21/00	07/21/00	07/21/00	07/21/00	07/21/00	07/21/00	07/21/00	07/21/00	07/21/00	07/21/00	07/21/00	07/21/00
Sampling Depth (feet)	Objective	7-9'	1-1.5'	3-4'	20-21	7-8	4-5	7-8	7-8	14-15	19-20	6-7	7-8	14-15	19-20	7-8	14-15	19-20
Units	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg
BASE NEUTRALS																		
N-Nitrosodimethylamine	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
bis(2-Chloroethyl) ether	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,3-Dichlorobenzene	1,600	ND	30J	1300J	ND	ND	ND	ND	ND	**2,300 J**	ND	ND	**2,200 J**	ND	ND	ND	ND	ND
1,4-Dichlorobenzene	8,500	1200J	43J	2800J	ND	ND	ND	ND	3,000 J	**11,000 J**	ND	180 J	**7,500 J**	ND	ND	ND	ND	ND
1,2-Dichlorobenzene	7,900	4600	290J	4500	ND	ND	ND	3,500 J	5,700 J	2,100 J	ND	650 J	**14,000 J**	ND	ND	ND	ND	ND
bis(2-chloroisopropyl) ether	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
N-Nitroso-di-n-propylamine	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Hexachloroethane	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Nitrobenzene	200	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Isophorone	4,400	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
bis(2-Chloroethoxy)methane	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2,4-Trichlorobenzene	3,400	**18000**	3300	**6100**	ND	ND	ND	ND	3,000 J	960	ND	ND	**110,000**	ND	ND	ND	ND	ND
Naphthalene	13,000	**28000**	320	520	ND	31	ND	**160,000**	**43,000 J**	990 J	ND	1,100	**32,000 J**	290 J	ND	**37,000**	5,100	ND
Hexachlorobutadiene	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	4,200	ND	ND	ND	ND	ND	ND
Hexachlorocyclopentadiene	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2-Chloronaphthalene	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Dimethylphthalate	2,000	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Acenaphthylene	41,000	ND	ND	ND	ND	14	ND	ND	ND	ND	ND	ND	ND	340 J	ND	ND	ND	ND
2,6-Dinitrotoluene	1,000	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Acenaphthene	50,000	400	ND	ND	ND	8.5	ND	ND	ND	87 J	ND	ND	ND	590 J	ND	ND	ND	ND
2,4-Dinitrotoluene	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Diethylphthalate	7,100	1800J	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
4-Chlorophenyl-phenylether	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Fluorene	50,000	400	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	1,500	ND	ND	ND	ND
N-Nitrosodiphenylamine	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
4-Bromophenyl-phenylether	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Hexachlorobenzene	410	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Phenanthrene	50,000	1500	28J	ND	18	37	ND	ND	ND	ND	ND	370 J	ND	8,000	ND	ND	ND	ND
Anthracene	50,000	89J	ND	ND	ND	11	ND	ND	ND	ND	ND	ND	ND	2,600	ND	ND	ND	ND
Di-n-butylphthalate	8,100	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Fluoranthene	50,000	390	51	110J	ND	100	78 J	ND	ND	ND	ND	170 J	ND	10,000	ND	ND	ND	ND
Pyrene	50,000	360	45	130J	13	92	69 J	ND	ND	ND	ND	150 J	ND	10,000	ND	ND	98 J	ND
Benzidine	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Butylbenzylphthalate	50,000	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
3,3'-Dichlorobenzidine	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Benzo(a)anthracene	224	210	40	ND	14	48	42	ND	ND	ND	ND	ND	ND	**5,000**	ND	ND	ND	ND
Chrysene	400	110J	31J	ND	ND	70	47 J	ND	ND	ND	ND	ND	ND	**5,800**	ND	ND	ND	ND
bis(2-Ethylhexyl)phthalate	50,000	1200J	530	ND	ND	82	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Di-n-octylphthalate	50,000	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Benzo(b)fluoranthene	1,100	ND	40J	ND	ND	70	60	ND	ND	ND	ND	ND	ND	**6,100**	ND	ND	ND	ND
Benzo(k)fluoranthene	1,100	ND	18J	ND	ND	25	23 J	ND	ND	ND	ND	ND	ND	**2,500**	ND	ND	ND	ND
Benzo(a)pyrene	61	ND	ND	ND	ND	50	ND	ND	ND	ND	ND	ND	ND	**5,000**	ND	ND	ND	ND
Indeno(1,2,3-cd)pyrene	3200	ND	ND	ND	ND	33	ND	ND	ND	ND	ND	ND	ND	2,100	ND	ND	ND	ND
Dibenz(a,h)anthracene	14	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	**710**	ND	ND	ND	ND
Benzo(g,h,i)perylene	50,000	ND	ND	ND	ND	37	ND	ND	ND	ND	ND	ND	ND	1,800	ND	ND	ND	ND
Total Confident Conc. BN (s)		53860	4286	11120	45	708.5	319	163500	54700	17437	0	6820	165700	62330	0	37000	5198	0
Total Estimated Conc. BN TICs (s)		2130000	354500	10900	29140	18830	1,300	8,380,000	6,180,000	367,000	502,000	205,100	7,620,000	73,300	461,000	2,990,000	175,000	554,000

- Exceeds NYSDEC Soil Cleanup Criteria
ND - None Detected
NS - No Standard for Individual Contaminant
TIC - Tentatively Identified Compounds
J - The result is less than detection limit, but greater than zero

TABLE 1C

Dexter Chemical, L.L.C.
Historic Summary of Mercury and Metal Results for Soil
AEC-A

Sample ID	1994 NYSDEC	A-100	A-101	A-102A	A-102B	A-102D	A-103A	A-104A	A104-B	A104-C	A-105A	A-105B	A-105C
Lab Sample Number	Rec. Soil	218846	218847	218856	218857	218859	218860	218848	218849	218850	218851	218852	218853
Sampling Date	Cleanup	7/21/2000	07/21/00	07/21/00	07/21/00	07/21/00	07/21/00	07/21/00	07/21/00	07/21/00	07/21/00	07/21/00	07/21/00
Sampling Depth (feet)	Objective	4-5	7-8	7-8	14-15	19-20	6-7	7-8	14-15	19-20	7-8	14-15	19-20
Units	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Mercury	0.1	0.07	**1.1**	0.07	**0.16**	ND	**0.37**	**0.29**	**0.16**	ND	**0.13**	**0.2**	ND

- Exceeds NYSDEC Soil Cleanup Criteria
ND - None Detected

Sample ID	1994 NYSDEC	ISB-1	ISB-2	ISB-3	A-1	MW-6
Lab Sample Number	Rec. Soil	32211	32212	32214	48923	49339
Sampling Date	Cleanup	11/18/97	11/18/97	11/18/97	03/10/98	3/12/1998
Sample Depth	Objective	7-9'	1-1.5'	3-4'	20-21	7--8
Units	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
PRIORITY POLLUTANT METALS						
Antimony	SB	12.4	ND	ND	ND	ND
Arsenic	7.5	5.8	2	3.1	7.9	ND
Beryllium	0.16	**0.23**	**0.52**	**0.47**	0.89	0.46
Cadmium	1	**0.44**	ND	ND	ND	ND
Chromium	10	**18.6**	**19**	**16.1**	36.4	24
Copper	25	**194**	17.7	**26**	13.2	38.1
Lead	*SB	569	21.3	47.8	14.6	22
Mercury	0.1	**0.64**	0.06	**0.19**	ND	0.05
Nickel	13	**14.2**	**17.2**	**14.2**	26.4	17.7
Selenium	2	ND	ND	ND	ND	ND
Silver	SB	0.46	ND	ND	ND	ND
Thallium	SB	ND	ND	ND	ND	ND
Zinc	20	**111**	**49.3**	**72.9**	76.4	56.4

- Results above 1994 NYSDEC Rec. Soil Cleanup Objective
ND - None Detected
NS - No Standard
ISB - *Interior Soil Boring* (819 Edgewater Road Plant)
SB - Site Background
*Lead - Background levels for lead vary widely. Average levels in undeveloped, rural areas may range from 4-61 ppm. Average background levels in metropolitan or suburban areas or near highways are much higher and typically range from 200-500 ppm.

TABLE 2

Dexter Chemical, L.L.C.
Historic Summary of Volatile Organic Results for Soil - AEC-I

Sample ID	1994 NYSDEC	AISB-1A	AISB-1B	AISB-1C	AISB-2A	AISB-2B	AISB-3A	AISB-3B	AISB-3C	AISB-4A	AISB-4B	AISB-4C	AISB-4D	AISB-5A	AISB-5B	AISB-5D	AISB-5E	AISB-6A	AISB-6B	AISB-7A	AISB-7B	AISB-8A	AISB-8B
Lab Sample Number	Recommended Soil	07190-001	07190-002	07190-003	07190-004	07190-005	07190-006	07190-007	07190-008	07190-009	07190-010	07190-011	09114-016	07190-012	07190-013	09114-017	09114-018	07190-014	07190-015	07190-016	07190-017	07190-018	07190-019
Sampling Depth (feet)	Cleanup	08/14/03	08/14/03	08/14/03	08/14/03	08/14/03	08/14/03	08/14/03	08/14/03	08/14/03	08/14/03	08/14/03	10/09/03	08/14/03	08/14/03	10/09/03	10/09/03	08/14/03	08/14/03	08/14/03	08/14/03	08/14/03	08/14/03
Sample Date	Objective	7.5 - 8	10.5 - 11	14.5 - 15	8.5 - 9	14.5 - 15	7.5 - 8	9 - 9.5	13 - 13.5	7.5 - 8	10.5 - 11	13.5 - 14	15.5 - 16	7.5 - 8	11.5 - 12	13 - 13.5	14.5 - 15	7.5 - 8	11.5 - 12	7.5 - 8	11.5 - 12	9.5 - 10	12.5 - 13
Units	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg
VOLATILE COMPOUNDS																							
Chloromethane	1,900	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Vinyl Chloride	200	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Bromomethane	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chloroethane	1,900	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Trichlorofluoromethane	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Acrolein	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1-Dichloroethene	400	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Methylene Chloride	6,000	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Acrylonitrile	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
trans-1,2-Dichloroethene	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1-Dichloroethane	200	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
cis-1,2-Dichloroethene	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chloroform	300	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1,1-Trichloroethane	800	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Carbon Tetrachloride	600	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichloroethane(EDC)	100	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Benzene	60	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Trichloroethene	700	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichloropropane	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Bromodichloromethane	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2-Chloroethylvinyl Ether	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
cis-1,3-Dichloropropene	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Toluene	1,500	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
trans-1,3-Dichloropropene	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1,2-Trichloroethane	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Tetrachloroethene	1,400	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Dibromochloromethane	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chlorobenzene	1,700	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Ethylbenzene	5,500	ND	1,390	ND	ND	ND	7.12	559 J	514 J	ND	ND	231 J	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Total Xylenes	1,200	ND	**10,500**	ND	ND	ND	36.6	**3,570**	**3,140**	ND	ND	**1,390**	ND	261 J	ND	ND	ND	ND	ND	ND	ND	ND	ND
Bromoform	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1,2,2-Tetrachloroethane	600	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,3-Dichlorobenzene	1,600	ND	323 J	183 J	1,570	ND	2.03	215 J	234 J	ND	ND	329 J	ND	ND	ND	ND	ND	ND	ND	ND	1.93 J	23 J	ND
1,4-Dichlorobenzene	8,500	ND	1,770	430 J	3,590	ND	12.1	1,560	1,330	1,040	ND	1,000	ND	ND	ND	ND	ND	3.72 J	155	344 J	15	153	726
1,2-Dichlorobenzene	7,900	ND	2,110	ND	ND	ND	6.65	329 J	269 J	ND	ND	ND	ND	ND	ND	ND	ND	ND	125 J	ND	ND	94	213 J
1,2,4-Trichlorobenzene	3,400	ND	**23,400**	1,280	2,580	ND	ND	1,720	2,500	1,350	ND	3,110	ND	ND	ND	ND	ND	14	2,250	1,840	ND	1,790	3,360
Naphthalene	13,000	223 J	5,390	1,560	ND	ND	7.85	413 J	536 J	ND	ND	924	ND	ND	ND	ND	ND	4.82 J	2,070	ND	12	171	ND
Total Confident Conc.		223 J	44,900 J	3,450 J	7,740	ND	72.4	8,370 J	8,520 J	2,390	ND	6,980 J	ND	261 J	ND	ND	ND	23 J	4,600 J	2,180 J	29 J	2,230 J	4,300 J
Total Estimated Conc. VOA TICs (s)		4,250	56,400	6,810	26,400	13,100	210	11,300	11,200	9,420	1,780	43,300	18	1,240	ND	ND	ND	ND	9,060	5,620	10	1,500	22,000

- Detected above NYSDEC Soil Cleanup Criteria - TAGM Memo #4046
S - No Standard for Individual Contaminant
U - None Detected
~ - Not Analyzed
IA - Standard Not Available

TABLE 2

Dexter Chemical, L.L.C.
Historic Summary of Volatile Organic Results for Soil - AEC-I

Sample ID Lab Sample Number Sampling Depth (feet) Sample Date Units	1994 NYSDEC Recommended Soil Cleanup Objective ug/kg	AISB-9A 09114-001 10/09/03 7 - 7.5 ug/kg	AISB-9B 09114-002 10/09/03 9.5 - 10 ug/kg	AISB-9C 09114-003 10/09/03 14.5 - 15 ug/kg	AISB-10A 09114-004 10/09/03 7 - 7.5 ug/kg	AISB-10B 09114-005 10/09/03 10.5 - 11 ug/kg	AISB-10C 09114-006 10/09/03 14.5 - 15 ug/kg	AISB-11A 09114-007 10/09/03 7.5 - 8 ug/kg	AISB-11B 09114-008 10/09/03 10.5 - 11 ug/kg	AISB-11C 09114-009 10/09/03 14.5 - 15 ug/kg	AISB-12A 09114-010 10/09/03 7.5 - 8 ug/kg	AISB-12B 09114-011 10/09/03 10.5 - 11 ug/kg	AISB-12C 09114-012 10/09/03 14.5 - 15 ug/kg	AISB-13A 09114-013 10/09/03 7.5 - 8 ug/kg	AISB-13B 09114-014 10/09/03 10.5 - 11 ug/kg	AISB-13C 09114-015 10/09/03 14.5 - 15 ug/kg
VOLATILE COMPOUNDS																
Chloromethane	1,900	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Vinyl Chloride	200	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Bromomethane	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chloroethane	1,900	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Trichlorofluoromethane	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Acrolein	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1-Dichloroethene	400	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Methylene Chloride	6,000	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Acrylonitrile	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
trans-1,2-Dichloroethene	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1-Dichloroethane	200	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
cis-1,2-Dichloroethene	NS	ND	ND	ND	ND	ND	30	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chloroform	300	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1,1-Trichloroethane	800	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Carbon Tetrachloride	600	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichloroethane(EDC)	100	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Benzene	60	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Trichloroethene	700	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichloropropane	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Bromodichloromethane	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2-Chloroethylvinyl Ether	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
cis-1,3-Dichloropropene	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Toluene	1,500	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
trans-1,3-Dichloropropene	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1,2-Trichloroethane	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Tetrachloroethene	1,400	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Dibromochloromethane	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chlorobenzene	1,700	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	9.9	ND
Ethylbenzene	5,500	173	48	ND	588 J	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Total Xylenes	1,200	**1,370**	460	41	**5,170**	**2,930**	42	ND	ND	ND	ND	ND	ND	ND	ND	2.2 J
Bromoform	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1,2,2-Tetrachloroethane	600	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,3-Dichlorobenzene	1,600	75	220	14 J	454 J	ND	9 J	ND	ND	ND	ND	ND	ND	ND	3.2 J	ND
1,4-Dichlorobenzene	8,500	287	366	20 J	1,300	1,220	52	ND	ND	ND	ND	ND	ND	ND	2.6 J	ND
1,2-Dichlorobenzene	7,900	363	277	ND	2,610	2,310	139	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2,4-Trichlorobenzene	3,400	2,080	707	22 J	**21,900**	**32,200**	1,140	ND	ND	ND	ND	ND	ND	ND	ND	ND
Naphthalene	13,000	1,860	880	738	**14,200**	5,710	627	ND	3.6 J	ND	ND	ND	ND	ND	ND	ND
Total Confident Conc.		6,210	2,960	834 J	46,200 J	44,400	2,040 J	ND	3.6 J	ND	ND	ND	ND	ND	16 J	2.2 J
Total Estimated Conc. VOA TICs (s)		12,800	3,970	5,190	181,000	79,900	3,430	ND	36	ND	ND	114	ND	ND	319	135

- Detected above NYSDEC Soil Cleanup Criteria - TAGM Memo #4046

NS - No Standard for Individual Contaminant

ND - None Detected

~ - Not Analyzed

NA - Standard Not Available

TABLE 2

Dexter Chemical, L.L.C.
Historic Summary of Volatile Organic Results for Soil - AEC-I

Sample ID Lab Sample Number Sampling Depth (feet) Sample Date Units	1994 NYSDEC Recommended Soil Cleanup Objective ug/kg	AISB-14A 06044-001 7.5 - 8 06/28/04 ug/kg	AISB-14B 06044-002 10.5 - 11 06/28/04 ug/kg	AISB-14C 06044-003 12.5 - 13 06/28/04 ug/kg	AISB-15 06044-004 2.5 - 3 06/28/04 ug/kg	AISB-16 06044-005 3.5 - 4 06/28/04 ug/kg	AISB-17A 06044-006 5.5 - 6 06/28/04 ug/kg	AISB-17B 06044-007 8.5 - 9 06/28/04 ug/kg	AISB-17C 06044-008 14.5 - 15 06/28/04 ug/kg	AISB-18A 06044-009 6.5 - 7 06/28/04 ug/kg	AISB-18B 06044-010 11.5 - 12 06/28/04 ug/kg	AISB-18C 06044-011 14.5 - 15 06/28/04 ug/kg	AISB-19 06044-012 3.5 - 4 06/28/04 ug/kg
VOLATILE COMPOUNDS													
Chloromethane	1,900	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Vinyl Chloride	200	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Bromomethane	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chloroethane	1,900	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Trichlorofluoromethane	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Acrolein	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1-Dichloroethene	400	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Methylene Chloride	6,000	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Acrylonitrile	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
trans-1,2-Dichloroethene	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1-Dichloroethane	200	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
cis-1,2-Dichloroethene	NS	ND	ND	ND	ND	16	ND	ND	ND	ND	ND	ND	ND
Chloroform	300	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1,1-Trichloroethane	800	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Carbon Tetrachloride	600	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichloroethane(EDC)	100	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Benzene	60	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Trichloroethene	700	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichloropropane	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Bromodichloromethane	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2-Chloroethylvinyl Ether	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
cis-1,3-Dichloropropene	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Toluene	1,500	ND	ND	ND	ND	ND	ND	ND	ND	2.89 J	ND	ND	ND
trans-1,3-Dichloropropene	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1,2-Trichloroethane	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Tetrachloroethene	1,400	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Dibromochloromethane	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chlorobenzene	1,700	ND	21	ND	ND	ND	ND	ND	ND	ND	174	ND	7.72
Ethylbenzene	5,500	1,300	8.53	ND	3.02 J	ND	4,590	ND	ND	ND	71	ND	2.22 J
Total Xylenes	1,200	**12,200**	485	ND	3.97 J	1.57 J	**22,600**	166	ND	ND	543	ND	5.31 J
Bromoform	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1,2,2-Tetrachloroethane	600	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,3-Dichlorobenzene	1,600	391 J	11	ND	ND	1.39 J	**2,020**	89	ND	48 J	74	ND	7.77
1,4-Dichlorobenzene	8,500	1,670	64	ND	ND	3.95 J	5,810	439	ND	213	237	ND	31
1,2-Dichlorobenzene	7,900	927	5.18 J	ND	ND	ND	5,310	222	ND	151	13	ND	ND
1,2,4-Trichlorobenzene	3,400	**11,400**	ND	ND	ND	ND	**43,700**	73	ND	451	3.66 J	ND	ND
Naphthalene	13,000	4,000	89	ND	ND	ND	10,400	464	ND	386	75	ND	ND
Total Confident Conc.		31,900 J	683 J	ND	6.99 J	23 J	94,400	1,450	ND	1,250 J	1,190 J	ND	54 J
Total Estimated Conc. VOA TICs (s)		63,600	510	13,000	135	9.57	17,200	3,720	32	169	111	55	ND

- Detected above NYSDEC Soil Cleanup Criteria - TAGM Memo #4046

NS - No Standard for Individual Contaminant

ND - None Detected

~ - Not Analyzed

NA - Standard Not Available

TABLE 3

Dexter Chemical, L.L.C.
Summary of Volatile Organic Compound Results For Ground Water

Sample ID Lab Sample Number Sampling Date Units	1998 NYSDEC Ground Water Standards/Criteria ug/l	MW-1 231797 09/27/00 ug/L	MW-2 281798 09/27/00 ug/L	MW-3 231799 09/27/00 ug/L	MW-4 231800 09/27/00 ug/L	MW-5 231801 09/27/00 ug/L	MW-6 328632 1/22/02 ug/l	MW-7 231803 09/27/00 ug/L	MW-8 231804 09/27/00 ug/L	MW-9 9551-001 12/3/02 ug/l	MW-10 9551-002 12/3/02 ug/l	PZ-1 328628 1/22/02 ug/l	PZ-2 328629 1/22/02 ug/l	PZ-3 328630 1/22/02 ug/l	PZ-4 9551-004 12/3/02 ug/l	GW-1 322116 12/14/01 ug/l	GW-2 322117 12/14/01 ug/l	GW-3 322118 12/14/01 ug/l
VOLATILE COMPOUNDS																		
Chloromethane	5*	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Bromomethane	5*	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Vinyl Chloride	2	ND	ND	ND	ND	ND	1.5	ND	ND	ND	ND	ND	ND	ND	1.05	ND	ND	**2.6**
Chloroethane	5*	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Methylene Chloride	5*	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Trichlorofluoromethane	5*	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1-Dichloroethene	5*	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1-Dichloroethane	5*	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
trans-1,2-Dichloroethene	5*	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
cis-1,2-Dichloroethene	5*	ND	2.1	0.6	ND	ND	**26**	3.5	ND	ND	0.252	ND	ND	ND	**38.9**	ND	ND	2.7
Chloroform	7	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichloroethane	0.6	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1,1-Trichloroethane	5*	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Carbon Tetrachloride	5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Bromodichloromethane	50	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichloropropane	1	ND	ND	ND	ND	ND	**95**	ND	ND	ND	ND	ND	ND	ND	**290**	ND	ND	**7.6**
cis-1,3-Dichloropropene	0.4 (a)	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Trichloroethene	5*	ND	ND	ND	ND	ND	2.5	ND	ND	ND	ND	ND	ND	ND	3.8	ND	ND	1.1
Dibromochloromethane	50**	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1,2-Trichloroethane	1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Benzene	1	ND	0.4	0.3	ND	ND	**27**	**1.7**	0.6	ND	ND	ND	ND	ND	**9.75**	ND	ND	**8.8**
trans-1,3-Dichloropropene	0.4 (a)	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2-Chloroethyl Vinyl Ether	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Bromoform	50	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Tetrachloroethene	5*	ND	ND	ND	ND	ND	0.7	ND	ND	ND	ND	ND	ND	ND	1.98	ND	ND	ND
1,1,2,2-Tetrachloroethane	5*	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Toluene	5*	ND	ND	0.4	ND	ND	**73**	0.5	ND	ND	0.313	ND	ND	ND	**58.6**	ND	ND	**9.4**
Chlorobenzene	5*	ND	3.3	0.4	ND	ND	ND	**35**	ND	ND	1.47	ND	ND	ND	ND	ND	ND	2.8
Ethylbenzene	5*	ND	ND	1.6	ND	ND	**88**	0.8	ND	ND	0.329	ND	ND	ND	**195**	ND	ND	**24**
Xylene (Total)	5*	ND	0.8	**16**	ND	ND	**470**	**15**	1.4	ND	3.17	ND	ND	1.3	**1280**	ND	ND	**80**
1,3-Dichlorobenzene	3	ND	ND	ND	ND	ND	ND	1.4	ND	ND	ND	ND	ND	ND	ND	ND	ND	2.8
1,4-Dichlorobenzene	3	ND	ND	1.4	ND	ND	**4.6**	2.9	ND	ND	ND	ND	ND	ND	0.693	ND	ND	**9.4**
1,2-Dichlorobenzene	3	ND	ND	ND	ND	ND	**9.1**	ND	ND	ND	0.34	ND	ND	ND	**4.13**	ND	ND	**4.6**
1,2,4-Trichlorobenzene	5	ND	ND	3.0	ND	ND	**11**	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	**8.7**
Naphthalene	10**	ND	ND	ND	ND	ND	**41**	1.1	ND	ND	ND	0.3	ND	0.3	**44.6**	0.3	1.6	3.4
Total Confident Conc. VOAs (s)		0	6.6	19.3	0	0	783.7	56.5	2.0	0	5.874	0	0	1.3	1928.503	0	0	139
Total Estimated Conc. VOA TICs (s)		0	26	90	12	21	1013	128	36	5	506.6	12	16	526	2764	0	172	212

- Results above 1998 NYSDEC Ground Water Standards/Criteria - GA Water Class
ND - None Detected
NS - No Standard

FIGURES

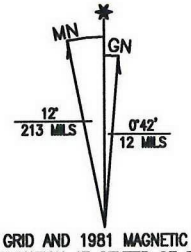
FIGURES

SCALE 1:24000

1 1/2 0 1 MILE

1000 0 1000 2000 3000 4000 5000 6000 7000 FEET

.5 .25 0 .5 KILOMETER



UTM GRID AND 1981 MAGNETIC NORTH DECLINATION AT CENTER OF SHEET

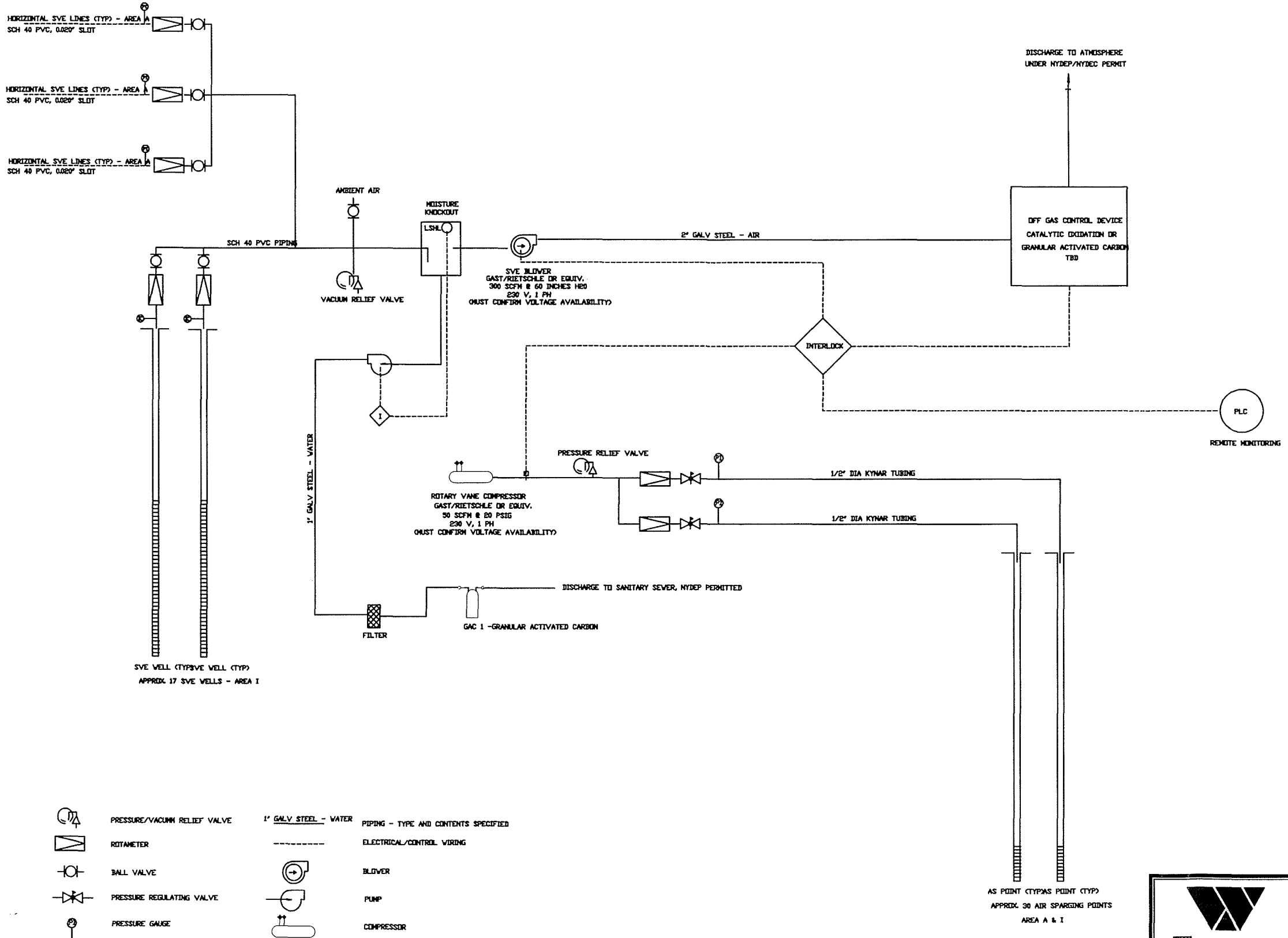
QUADRANGLE LOCATION

THE WHITMAN Companies, INC.

DEXTER CHEMICAL CORPORATION
845 EDGEWATER ROAD
BRONX, NEW YORK

SITE LOCATION ON USGS
CENTRAL PARK, N.Y. QUADRANGLE

ORIGINAL BY:	DRAWN BY:	DRAWING NO:
M.H.	R.R.	970910MAP
CHECKED BY:	DATE:	FIGURE NO:
M.H.	DECEMBER 2005	1



NOT TO SCALE

THE WHITMAN COMPANIES, INC.

DEXTER CHEMICAL LLC
BRONX, NEW YORK

AS/SVE SYSTEM
PIPING AND INSTRUMENTATION
DIAGRAM

ORIGINAL BY:	DRAWN BY:	DRAWING NO:
M.P.	A.A.	970910G7
CHECKED BY:	DATE:	FIGURE NO:
E.S.	MAY 2005	2

ATTACHMENTS

ATTACHMENT 1

PUBLIC COMMENT FACT SHEET

NEW YORK STATE DEPARTMENT OF

ENVIRONMENTAL CONSERVATION

Public Comment Period

August 15, 2005 to September 14, 2005

Dexter Chemical, LLC
845 Edgewater Road
Bronx, New York

What Happens Next: Written comments on the Remedial Action Work Plan will be accepted until September 14, 2005. All documents can be viewed at the Document Repositories listed in this Fact Sheet. Comments expressing objection or opposition to the VCP application, investigation report or remedial work plan must explain the basis of that opposition and identify the specific grounds which could lead the Department to impose significant changes to the work plan. Based on these comments, the NYSDEC may require the applicant to make revisions to the work plan. No Formal response will be made to comments received by the Department.

For Public Health questions:
NYSDOH
547 River Street
Troy, NY 12180Telephone: (800) 458-1158
Attn: Dawn Hettrick

For Environmental Concerns:
NYSDEC, Region 2 Office
47-40 21st Street
Long Island City, New York 11101
(718) 482-4909
Hari Agrawal, P.E.

For information regarding New York State's Voluntary Cleanup Program, please visit the Department's web Site:

FACT SHEET
Dexter Chemical LLC
DRAFT

AUGUST 2005
Bronx, NY

Public Comments Requested on the Remedial Action Work Plan (RAWP) for Dexter Chemical, LLC, Bronx, NY

The New York State Department of Environmental Conservation (NYSDEC) working cooperatively with the New York State Department of Health (NYSDOH), has approved an application for the Voluntary Cleanup Program for Dexter Chemical, LLC in Bronx, NY. The RAWP proposes Soil Vapor Extraction and Air Sparging System (SVE/ AS) as the remedies for the site.

Site Description: Dexter Chemical is a manufacturer of chemical products that are used in textiles, paint coatings and other industrial applications. Dexter first signed an investigation only Voluntary Cleanup Agreement with the NYSDEC in April 2000, under which substantial soil and groundwater was investigated to define onsite soil and groundwater quality. A second VCA was signed in December 2003 to gather additional data, delineate the extent of contamination, and remediate the site.

The Planned Action: To design, install and implement an SVE/ AS system to recover volatile organic compounds (VOCs) from the site's soil. Additional soil vapor investigations will also be conducted.

Previous Investigations: Prior to applying for VCA in June 1998, Dexter investigated the site unilaterally through multiple phases and concluded that the site was contaminated with Benzene, Toluene, Ethylbenzene, Xylenes, Polynuclear Aromatic Hydrocarbons (PAHs), Chlorobenzenes, and metals. The investigation conducted under the VCA with NYSDEC oversight confirmed previous findings. A pilot test was done to further check the feasibility of SVE/AS which were deemed as the presumed remedy for the site. Additionally, soil gas investigation around the site perimeter was done per NYSDOH requirements to evaluate the potential on and off-site for soil vapor intrusion. These results are included in a Remedial Investigation Work Plan dated May 2005.

Citizen Information: A Remedial Action Work Plan is in review by NYSDEC and NYSDOH, but no remedy will be finalized until the public had a chance to comment on the work plan. All project related documents are available for your review at the Document Repositories listed below. Your comments are important and are strongly encouraged. Comments should be submitted during the comment period, which ends September 14, 2005. Please direct comments to:

Hari Agrawal, P.E., NYSDEC, Region 2 Office
(718) 482-4897

Document Repository: To view the RAWP and other information:
Bronx Borough Public Library **NYSDEC Region 2 Office**

ATTACHMENT 2

REMEDIAL ACTION WORK PLAN APPROVAL

New York State Department of Environmental Conservation
Division of Environmental Remediation, Region 2
47-40 21ST Street, Long Island City, NY 11101-5407
Phone: (718) 482-4995 • **FAX:** (718) 482-6358
Website: www.dec.state.ny.us

Erin M. Crotty
Commissioner

November 3, 2005

Ira L. Whitman, Ph. D., P.E.
The Whitman Companies, Inc.
116 Tices Lane, Unit B-1
East Brunswick, NJ 08816

Dear Dr. Whitman:

Subject: Dexter Chemical, Bronx, NY.
VCP # V00186-2
Remedial Action Work Plan: For Soil and Groundwater At Area "A" and Area "I"

Dear Dr. Whitman:

The Department has completed its review of the subject Remediation Action Work Plan. Based upon the information and representations given in the Work Plan (as modified by your amendment letter of September 29, 2005), and Progress Reports 1 through 4 submitted pursuant to the new Voluntary Cleanup Agreement executed on December 3, 2003, the Work Plan is hereby approved. The Work Plan, dated May 2005, was prepared by The Whitman Companies, Inc., and consists of Volume 1 - Text, Tables, Figures And Attachments.

Please contact Hari Agrawal, of my staff, at 718-482-4909 at your earliest convenience to discuss scheduling of the various tasks.

Sincerely,

Daniel C. Walsh
VCP Coordinator, and Chief of Hazardous Waste &
Petroleum Remediation, Region 2

cc:
Anthony Quartararo
P.Dave Smith
Rosalie Rusinko
Dawn Hettrick

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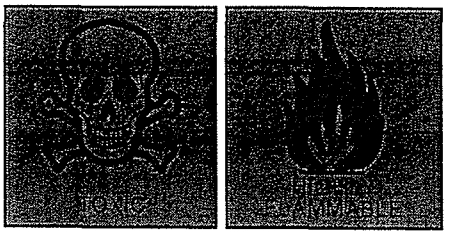
ATTACHMENT 3

MSDS SHEETS

Safety (MSDS) data for benzene



Click here for data on benzene in student-friendly format, from the HSci project

General

Synonyms: benzol, phenyl hydride, coal naphtha
Molecular formula: C_6H_6
CAS No: 71-43-2
EC No: 200-753-7

Physical data

Appearance: colourless liquid
Melting point: 5.5 C
Boiling point: 80 C
Specific gravity: 0.87
Vapour pressure: 74.6 mm Hg at 20 C
Flash point: -11 C
Explosion limits: 1.3 % - 8 %
Autoignition temperature: 561 C

Stability

Stable. Substances to be avoided include strong oxidising agents, sulphuric acid, nitric acid. **Highly flammable.**

Toxicology

This material is a known carcinogen. The risks of using it in the laboratory must be fully assessed before work begins. TLV 10 ppm. Short-term exposure may cause a variety of effects, including nausea, vomiting, dizziness, narcosis, reduction in blood pressure, CNS depression. Skin contact may lead to dermatitis. Long-term exposure may lead to irreversible effects. Severe eye irritant. Skin and respiratory irritant.

Toxicity data

(The meaning of any abbreviations which appear in this section is given here.)

ORL-MAN LDLO 50 mg kg^{-1}

ORL-RAT LD50 930 mg kg^{-1}

IHL-MUS LC50 9980 ppm

ORL-MUS LD50 4700 mg kg^{-1}

Risk phrases

(The meaning of any risk phrases which appear in this section is given here.)

R11 R23 R24 R25 R45 R48.

Personal protection

Safety glasses, gloves, good ventilation. Thought should be given to using an alternative, safer product.

Safety phrases

(The meaning of any safety phrases which appear in this section is given here.)

S45 S53.

[Return to Physical & Theoretical Chemistry Lab. Safety home page.]

Safety (MSDS) data for ethylbenzene

General

Synonyms: phenylethane, EB, ethylbenzol, ethyl benzene
Molecular formula: C_8H_{10}
CAS No: 100-41-4
EC No: 202-849-4

Physical data

Appearance: colourless liquid
Melting point: -95 C
Boiling point: 136 C
Vapour density: 3.7
Vapour pressure: 10 mm Hg at 20 C
Specific gravity: 0.867
Flash point: 15 C
Explosion limits: 1 % - 6.7 %
Autoignition temperature: 432 C

Stability

Stable. Incompatible with oxidizing agents. Flammable.

Toxicology

May be harmful by inhalation, ingestion or through skin contact. Causes severe eye irritation. Skin and respiratory system irritant. Experimental teratogen. Narcotic in high concentration.

Toxicity data
(The meaning of any abbreviations which appear in this section is given here.)
ORL-RAT LD50 3500 mg kg^{-1}
SKN-RBT LD50 17800 mg kg^{-1}
IHL-GPG LCLO 10000 ppm

Irritation data
(The meaning of any abbreviations which appear in this section is given here.)
SKN-RBT 15 mg/24h open mld.

Risk phrases
(The meaning of any risk phrases which appear in this section is given here.)
R10 R36 R37 R38.

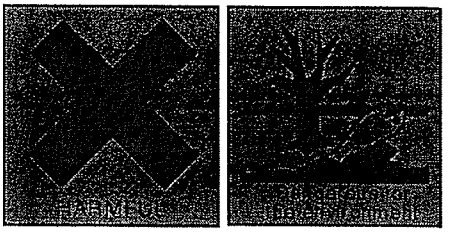
Personal protection

Safety glasses, adequate ventilation.

Safety phrases
(The meaning of any safety phrases which appear in this section is given here.)
S25.

[Return to Physical & Theoretical Chemistry Lab. Safety home page.]

Safety (MSDS) data for chlorobenzene



General

Synonyms: benzene chloride, chlorobenzol, phenyl chloride, monochlorobenzene, tetrosin SP
Molecular formula: C_6H_5Cl

CAS No: 108-90-7
EC No: 203-628-5
EC Index No: 602-033-00-1

Physical data

Appearance: colourless liquid
Melting point: -45 C
Boiling point: 132 C
Vapour density: 3.86
Vapour pressure: 12 mm Hg at 25 C
Specific gravity: 1.107
Flash point: 24 C
Explosion limits: 1.3 % - 7.1 %
Autoignition temperature: 636 C

Stability

Stable. Incompatible with oxidizing agents. Flammable.

Toxicology

Possible carcinogen. Harmful if swallowed, inhaled or absorbed through skin. Skin irritant. Typical PEL 75 ppm.

Toxicity data
(The meaning of any abbreviations which appear in this section is given here.)

ORL-RAT LD50 1110 mg kg^{-1}
IHL-RAT LC50 2965 ppm
IPR-RAT LD50 1655 mg kg^{-1}

ORL-MUS LD50 2300 mg kg^{-1}
ORL-MAM LD50 2300 mg kg^{-1}

Risk phrases
(The meaning of any risk phrases which appear in this section is given here.)
R10 R20 R21 R22 R51 R53.

Environmental information

Harmful in the environment.

Transport information

(The meaning of any UN hazard codes which appear in this section is given here.)
UN No 1134. Packing group III. Major hazard class 3.0. Transport category 3.

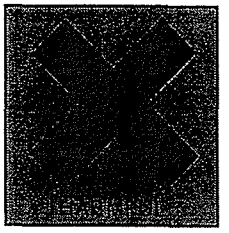
Personal protection

Safety glasses and good ventilation.

Safety phrases
(The meaning of any safety phrases which appear in this section is given here.)
S24 S25 S61.

[Return to Physical & Theoretical Chemistry Lab. Safety home page.]

Safety (MSDS) data for o-xylene



General

Synonyms: ortho-xylene, 1,2-dimethylbenzene
Molecular formula: C_8H_{10}
CAS No: 95-47-6
EC No: 202-422-2

Physical data

Appearance: colourless liquid
Melting point: -24 C
Boiling point: 144 C
Vapour density: 3.7
Vapour pressure: 7 mm Hg at 20 C
Specific gravity: 0.87
Flash point: 32 C (closed cup)
Explosion limits: 1.1 % - 7 %
Autoignition temperature: 463 C

Stability

Stable. Incompatible with oxidizing agents. Flammable. Hygroscopic.

Toxicology

Harmful if swallowed, inhaled or absorbed through skin. Narcotic. May cause lung irritation, chest pain or fatal oedema. **May impair fertility.** Typical STEL 150 ppm.

Toxicity data

(The meaning of any abbreviations which appear in this section is given here.)
IPR-MUS LD50 1.5 ml kg^{-1}

Risk phrases

(The meaning of any risk phrases which appear in this section is given here.)
R10 R20 R21 R38.

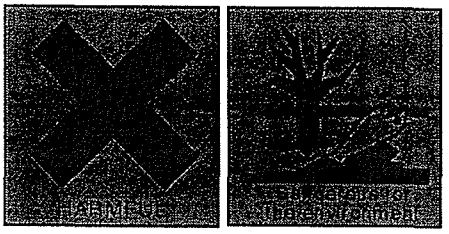
Personal protection

Safety glasses, adequate ventilation.

Safety phrases
(The meaning of any safety phrases which appear in this section is given here.)
S25.

[Return to Physical & Theoretical Chemistry Lab. Safety home page.]

Safety (MSDS) data for chlorobenzene



General

Synonyms: benzene chloride, chlorobenzol, phenyl chloride, monochlorobenzene, tetrosin SP
Molecular formula: C_6H_5Cl

CAS No: 108-90-7
EC No: 203-628-5
EC Index No: 602-033-00-1

Physical data

Appearance: colourless liquid
Melting point: -45 C
Boiling point: 132 C
Vapour density: 3.86
Vapour pressure: 12 mm Hg at 25 C
Specific gravity: 1.107
Flash point: 24 C
Explosion limits: 1.3 % - 7.1 %
Autoignition temperature: 636 C

Stability

Stable. Incompatible with oxidizing agents. Flammable.

Toxicology

Possible carcinogen. Harmful if swallowed, inhaled or absorbed through skin. Skin irritant. Typical PEL 75 ppm.

Toxicity data
(The meaning of any abbreviations which appear in this section is given here.)

ORL-RAT LD50 1110 mg kg^{-1}
IHL-RAT LC50 2965 ppm
IPR-RAT LD50 1655 mg kg^{-1}

ORL-MUS LD50 2300 mg kg^{-1}
ORL-MAM LD50 2300 mg kg^{-1}

Risk phrases
(The meaning of any risk phrases which appear in this section is given here.)
R10 R20 R21 R22 R51 R53.

Environmental information

Harmful in the environment.

Transport information

(The meaning of any UN hazard codes which appear in this section is given here.)
UN No 1134. Packing group III. Major hazard class 3.0. Transport category 3.

Personal protection

Safety glasses and good ventilation.

Safety phrases
(The meaning of any safety phrases which appear in this section is given here.)
S24 S25 S61.

[Return to Physical & Theoretical Chemistry Lab. Safety home page.]

Safety data for naphthalene-d8

General

Synonyms: perdeuteronaphthalene, deuterated naphthalene. [Note: This data sheet is for fully deuterated naphthalene. If you want data on the "normal" non-deuterated material, click here.]
Molecular formula: $C_{10}D_8$
CAS No: 1146-65-2
EINECS No: 214-552-7

Physical data

Appearance: white crystals
Melting point: 81 - 83 C
Boiling point:
Vapour density: 4.4 (air = 1)
Vapour pressure: 0.03 mm Hg at 25 C
Density (g cm^{-3}):
Flash point: 78 C
Explosion limits: 0.9 - 5.9%
Autoignition temperature:
Water solubility:

Stability

Stable. Incompatible with oxidising agents. Flammable.

Toxicology

Carcinogen. Toxic. Long-term contact with the vapour may cause serious and permanent eye damage. May act as an allergen.

Risk phrases
(The meaning of any risk phrases which appear in this section is given here.)
R20 R21 R22 R36 R37 R38 R43 R45.

Transport information

(The meaning of any UN hazard codes which appear in this section is given here.)
CGD UK Major hazard class: 4.1. Packing group: III

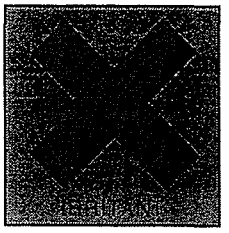
Personal protection

Safety glasses, gloves, good ventilation. Handle as a carcinogen.

Safety phrases
(The meaning of any safety phrases which appear in this section is given here.)
S16 S26 S36 S37 S39 S45.

[Return to Physical & Theoretical Chemistry Lab. Safety home page.]

Safety (MSDS) data for 1,2,4-trichlorobenzene



General

Synonyms: unsym-trichlorobenzene
Use:
Molecular formula: $C_6H_3Cl_3$
CAS No: 120-82-1
EC No:

Physical data

Appearance: colourless liquid
Melting point: 17 C
Boiling point: 213 C
Vapour density: 6.2 (air = 1)
Vapour pressure:
Density (g cm^{-3}): 1.45
Flash point: 110 C
Explosion limits: 2.5% - 6.6%
Autoignition temperature:
Water solubility: negligible

Stability

Stable. Incompatible with strong oxidizing agents. Combustible.

Toxicology

Skin, eye and respiratory irritant. Typical TLV/TWA 40 mg/m3.

Toxicity data
(The meaning of any abbreviations which appear in this section is given here.)
ORL-RAT LD50 756 mg kg^{-1}

ORL-MUS LD50 300 mg kg^{-1}

Risk phrases
(The meaning of any risk phrases which appear in this section is given here.)

Transport information

(The meaning of any UN hazard codes which appear in this section is given here.)
UN No 2321. Hazard class 6.1.

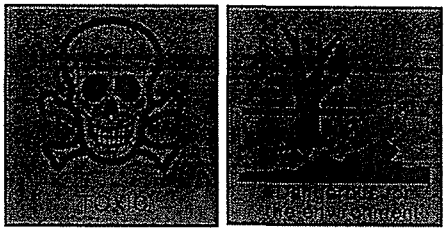
Personal protection

Safety glasses, adequate ventilation.

Safety phrases
(The meaning of any safety phrases which appear in this section is given here.)
S26 S36.

Return to Physical & Theoretical Chemistry Lab. Safety home page.]

Safety (MSDS) data for 1,2-dichlorobenzene



General

Synonyms: o-dichlorobenzene
Molecular formula: $C_6H_4Cl_2$
CAS No: 95-50-1
EC No: 202-425-9

Physical data

Appearance: colourless liquid
Melting point: -17 C
Boiling point: 179 C
Vapour density: 5.1
Vapour pressure: 1.2 mm Hg at 20 C
Specific gravity: 1.306
Flash point: 65 C
Explosion limits: 2.2 % - 9.2%
Autoignition temperature: 647 C

Stability

Stable. Incompatible with oxidizing agents, aluminium, aluminium alloys. Light sensitive.

Toxicology

Toxic. Harmful if swallowed, inhaled or absorbed through the skin. Eye, skin and respiratory tract irritant. May cause sensitization. Typical PEL 50 ppm.

Toxicity data
(The meaning of any abbreviations which appear in this section is given here.)
ORL-RAT LD50 500 mg kg^{-1}

Risk phrases
(The meaning of any risk phrases which appear in this section is given here.)

R22 R36 R37 R38 R50 R53.

Environmental information

Extremely harmful to the aquatic environment; may cause long-term damage.

Personal protection

Safety glasses, good ventilation.

Safety phrases
(The meaning of any safety phrases which appear in this section is given here.)
S23 S60 S61.

[Return to Physical & Theoretical Chemistry Lab. Safety home page.]

Safety (MSDS) data for 1,3-dichlorobenzene

General

Synonyms: m-dichlorobenzene, meta-dichlorobenzene
Molecular formula: $C_6H_4Cl_2$
CAS No: 541-73-1
EC No:

Physical data

Appearance: colourless liquid
Melting point: -24.8 C
Boiling point: 173 C
Vapour density:
Vapour pressure: 5 mm Hg at 39 C
Density (g cm^{-3}): 1.29
Flash point: 63 C
Explosion limits:
Autoignition temperature: 648 C
Water solubility: negligible

Stability

Combustible. Incompatible with strong oxidizing agents, aluminium, aluminium alloys. Moisture-sensitive.

Toxicology

May be harmful if inhaled, swallowed or absorbed through the skin. May act as a mutagen.

Toxicity data
(The meaning of any abbreviations which appear in this section is given here.)
IPR-MUS LD50 1062 mg kg^{-1}

Risk phrases
(The meaning of any risk phrases which appear in this section is given here.)

Transport information

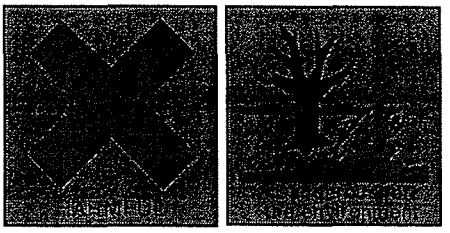
Personal protection

Safety glasses, good ventilation.

Safety phrases
(The meaning of any safety phrases which appear in this section is given here.)

eturn to Physical & Theoretical Chemistry Lab. Safety home page.]

Safety (MSDS) data for 1,4-dichlorobenzene



General

Synonyms: p-dichlorobenzene, para-dichlorobenzene, p-chlorophenyl chloride, p-dichlorobenzol, di-chloricide, evola, globol, NCI-C54955, paracide, para crystals, paradi, paradow, paramoth, paranuggets, parazene, pdcb, persia-perazol, santochlor, various other non-systematic names
Use: Moth repellant and general insecticide, deodorant and disinfectant.
Molecular formula: $C_6H_4Cl_2$
CAS No: 106-46-7
EINECS No:

Physical data

Appearance: colourless or white crystals
Melting point: 53 C
Boiling point: 174 C
Vapour density: 5.1 (air = 1)
Vapour pressure: 0.6 mm Hg at 20 C
Density (g cm^{-3}): 1.25
Flash point: 65 C (closed cup)
Explosion limits:
Autoignition temperature:
Water solubility: negligible

Stability

Stable. Combustible. Incompatible with strong oxidizing agents, aluminium and its alloys, some plastics.

Toxicology

Harmful if swallowed or inhaled; may be harmful if absorbed through the skin. Experimental mutagen, carcinogen and teratogen. Possible human carcinogen. May act as a systemic poison if swallowed. Typical TLV/TWA 75 ppm. Typical STEL 110 ppm. Typical PEL 75 ppm.

Toxicity data

(The meaning of any abbreviations which appear in this section is given here.)
ORL-HMN TDLO 300 mg kg^{-1}
ORL-MUS LD50 2950 mg kg^{-1}
IPR-MUS LD50 2000 mg kg^{-1}
IPR-RAT LD50 2562 mg kg^{-1}
ORL-RAT LD50 500 mg kg^{-1}

Risk phrases
(The meaning of any risk phrases which appear in this section is given here.)
R20 R22 R36 R50 R53.

Environmental information

Very harmful in the environment. Expected to biodegrade very slowly.

Transport information

(The meaning of any UN hazard codes which appear in this section is given here.)
UN No 1592. Packing group III. Hazard class 6.1.

Personal protection

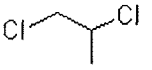
Safety glasses, gloves, adequate ventilation.

Safety phrases
(The meaning of any safety phrases which appear in this section is given here.)
S24 S25 S46 S60 S61.

[Return to Physical & Theoretical Chemistry Lab. Safety home page.]

1,2-Dichloropropane

Synonyms: Propylene dichloride; Dichloropropane; 98%; Aluminium Diethyl Monochloride
Molecular Formula: $C_3H_6Cl_2$
Formula Weight: 112.98
Registry number: 78-87-5



Registry number (RN, CAS): 78-87-5
Density: 1.15
Melting point (Mp): -100-100 °C
Boiling point: 95-96 °C
nD20: 1.438-1.44
Flash point: 15 °C

Hazard Symbol

F  Highly flammable

Xn  Harmful

Risk Description

R11 Highly flammable.
R20/22 Harmful by inhalation and if swallowed.

Safety Description

S16 Keep away from sources of ignition - No smoking.
S24 Avoid contact with skin.

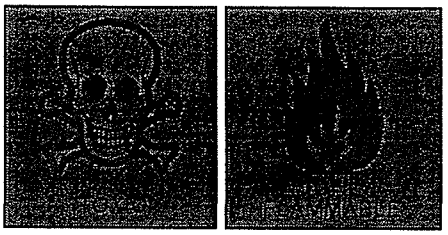
Products commercially available

Supplier	Name and purity	Qtt	Reference
ABCR	1,2-Dichloropropane; 98%	200.00 g	TCD0398 Get offer
Acros	1,2-Dichloropropane 98%	5 ML 50 ML	113670050 Get offer 113670500 Get offer
chemos	Propylene dichloride	on request	D0398 Get offer
cnpc	1,2-Dichloropropane	on request	Get offer
dayangchem	1,2-Dichloropropane	on request	DY5158 Get offer
dsl	1,2-Dichloropropane	on request	C012469 Get offer
lancaster	1,2-Dichloropropane 98	25g 100g	X03083G0025 X03083G0100
MatrixSwitzerland	1,2-Dichloropropane	semi bulk bulk	Get offer Get offer
yick-vic	Aluminium Diethyl Monochloride	>1000 kg	SPI-0545 Get offer

ChemExper Chemical Directory : find chemicals suppliers

CHEMEXPER

Safety (MSDS) data for vinyl chloride



General

Synonyms: vinyl chloride monomer, monochloroethylene, ethylene monochloride, monochloroethene, VC, VCM, chloroethene, chloroethylene
Molecular formula: C_2H_3Cl

CAS No: 75-01-4
EINECS No: 200-831-0
Annex I Index No: 602-023-00-7

hysical data

Appearance: colourless gas
Melting point: -153.7 C
Boiling point: -13.9 C
Vapour density: 2.2 (air = 1)
Vapour pressure: 2580 mm Hg at 20 C

Density (g cm^{-3}): 0.9106
Flash point: -61 C (closed cup)
Explosion limits:
Autoignition temperature:

Water solubility: 0.11 g 100 cm^{-3} at 25 C
Critical temperature: 156.5 C

Stability

Stable, but may be light sensitive. May undergo autopolymerization. Incompatible with strong oxidizing agents, chemically active metals, copper. **Highly flammable.** Severe explosion risk at concentrations of around 3%. It is reported that "large fires of this material are practically inextinguishable".

oxicology

This material is a known human carcinogen. Harmful if inhaled or absorbed through the skin. May be a reproductive hazard. Typical TWA 1 ppm.

Toxicity data
(The meaning of any abbreviations which appear in this section is given here.)
IHL-MAN TCLO 500 ppm/4y-i
ORL-RAT LD50 500 mg kg^{-1}

Risk phrases
(The meaning of any risk phrases which appear in this section is given here.)
R13 R45.

Transport information

(The meaning of any UN hazard codes which appear in this section is given here.)
UN No 1086. Major hazard class 2. Subsidiary hazard class 3. Not permitted as cargo on passenger planes.

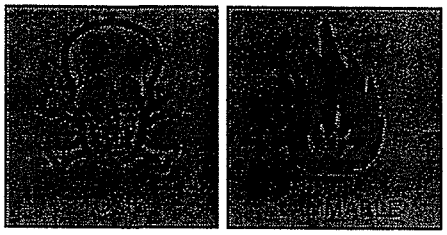
Personal protection

Safety glasses, good ventilation. Handle as a carcinogen.

Safety phrases
(The meaning of any safety phrases which appear in this section is given here.)
S9 S16 S44 S53.

Return to Physical & Theoretical Chemistry Lab. Safety home page.]

Safety (MSDS) data for 1,2-dichloroethane



General

Synonyms: 1,2-bichloroethane, dichloroethylene, ethylene chloride, ethane dichloride, ethylene dichloride, 1,2-ethylene dichloride, glycol dichloride, EDC, NCI-C00511, sym-dichloroethane, alpha, beta-dichlorocthane, borer sol, brocide, destruxol, dichloremulsion, dutch oil, di-chlor-mulsion, dutch liquid, freon 150, NU-G00511
Molecular formula: $C_2H_4Cl_2$

CAS No: 107-06-2
EC No: 203-458-1
EC Index No 602-012-00-7

Physical data

Appearance: colourless liquid
Melting point: -35 C
Boiling point: 83 C
Specific gravity: 1.256
Vapour pressure: 387 mm Hg at 25 C
Vapour density: 3.4 (air = 1)
Flash point: 15 C
Explosion limits: 6.2% - 15.6%
Autoignition temperature: 775 F
Water solubility: slight

Stability

Stable. Substances to be avoided include oxidising agents, strong alkalies, strong caustics, magnesium, sodium, potassium, active amines, ammonia, iron, zinc, nitric acid and aluminium. Air and light sensitive. **Highly flammable**.

Toxicology

Probable human carcinogen. Causes liver damage. Mutagen, toxic. Experimental transplacental carcinogen. May cause systemic effects. Narcotic. Regarded as a priority pollutant in many countries. Skin irritant. A long-term MEL of 20 mg per cubic metre (8-hour

TWA reference period) applies to this chemical in the UK.

Toxicity data
(The meaning of any abbreviations which appear in this section is given here.)
ORL-RAT LD50 670 mg kg^{-1}
SKN-RBT LD50 2800 mg kg^{-1}
IHL-RAT LD50 1000 ppm/7h
ORL-HMN LDLO 286 mg kg^{-1}
ORL-MAN LDLO 714 mg kg^{-1}
ORL-DOG LD50 5700 mg kg^{-1}

Risk phrases
(The meaning of any risk phrases which appear in this section is given here.)
R11 R22 R36 R37 R38 R45.

Transport information

(The meaning of any UN hazard codes which appear in this section is given here.)
UN No 1184. Packing group II. Major hazard class 3.0. Subsidiary hazard class 6.1.

Personal protection

Safety glasses. Good ventilation. Use precautions appropriate to a carcinogen.

Safety phrases
(The meaning of any safety phrases which appear in this section is given here.)
S45 S53.

Return to Physical & Theoretical Chemistry Lab. Safety home page.]

HEALTH AND SAFETY PLAN
SIGN-OFF SHEET

SITE NAME/PROJECT NUMBER: _____

LOCATION: _____

WHITMAN FIELD SUPERVISOR: _____

I have read, understood, and agreed to comply with the provisions of the above referenced job site Health and Safety Plan for work activities on this site.

Name (Print)	Signature	Date

This HASP was prepared by: _____

ATTACHMENT 4

HEALTH AND SAFETY PLAN

THE WHITMAN COMPANIES, INC.
HEALTH AND SAFETY PLAN
PROJECT NO. 97-09-10

***Project Name:**	Dexter Chemical		
***Project No.:**	97-09-10		
***Site Location:**	Edgewater Road, Bronx, New York		
***Mark Out Reference #**			
***Client:**	Dexter Chemical		
***Contact:**	Len Sitver	***Telephone:**	718-542-7700
		Pager #:	
***Project Manager:**	Rich Britton	***Telephone:**	732-390-5858
		Fax Number:	732-390-9496
***Date:**	2/16/05		

Describe Objectives of Field Project

Install AS/SVE System

Operate AS/SVE System

Tasks: Check all applicable	**Task No.**
( ) Drilling	
() Soil Sampling	
(X) Well Point Installation	1
(X) Monitor Well Sampling	3
( ) Test Pit Installation	
( ) Drum Sampling and Consolidation	
( ) UST Removal	
( ) Waste Pile Classification	
( ) Remediation O&M of Systems	
( ) Spill Response	
(X)Soil Excavation/Trenching	2
( ) Other (Backfilling & Grading)	

***Surrounding Area**

(X) Residential (X) Industrial ( ) Vacant Land (X) Commercial ( ) Other:

* This plan is provided to subcontractors for informational purposes only. The information contained herein is the best information available to Whitman Companies' personnel at the time of the project. Not withstanding anything to the contrary herein, all subcontractors are solely and independently responsible for insuring that their health and safety plans adequately address federal and state requirements.

JOB-SITE HAZARDS

Physical State of Contaminants:

(X) Liquid (X) Solid (X) Gas/Vapor ( ) Sludge ( ) Unknown ( ) Other, specify:

Characteristics of Contaminants:

( ) Corrosive	( ) Reactive	( ) Explosive	( ) Flammable	(X) Irritant
(X) Toxic	( ) Unknown	( ) Biological	( ) Radiological	(X) Volatile
( ) Other, specify:				

Principal Hazards on Job-Site:

(X) Heat Stress	(X) Cold Stress	(X) Physical Hazards
(X) Noise	( ) Organic Chemicals	( ) Inorganic Chemicals
( ) Explosive/Flammable	( ) Oxygen Deficient	( ) Radiological
( ) Biological	( ) Confined Space*	( ) Electrical
( ) Cutting/Welding	( ) Heavy Equipment	( ) Excavation
( ) Other, specify:		( ) Overhead Hazards

Location of On-site Hazardous Materials:

( ) Underground Storage Tanks	( ) Drums	( ) Pit or Lagoon
( ) Landfill	( ) Lined Sump	( ) Unlined Sump
( ) Above Ground Tanks	( ) Open Dump	( ) Unknown
( ) Other, specify:	( ) Surface Discharge	(X) Subsurface Discharge

If confined space entry is required, proper permitting and lock-out tag-out procedures must be followed.

TOXIC LIQUID//GAS CONTAMINANT DATA*

Known Contaminant(s)	Highest Site Conc. (ppm) (Year)	PEL ppm, mg/m^3	IDLH ppm, mg/m3	Ionization Potential (eV)	Instrument Response Factor	Action Concentration (ppm)	Symptoms/ Effects of Acute Exposure
BENZENE	430(1998)	1	500	9.24	1.78	1	See Attachment 4 and 5
ETHYLBENZENE	49,000(1997)	100	800	8.76	1	100	
TOLUENE	48,000(1998)	200	500	8.82	1.91	200	
TOTAL XYLENES	450,000(1997)	100	900	8.44	1	100	
CHLOROBENZENE	260,000(1997)	75	1000	9.07	N/A	75	
NAPHTHALENE	160,000(1997)	10	250	8.12	N/A	10	
1,2,4 TRICHLOROBENZENE	110,000(1998)	NONE	NONE	N/A	N/A	NONE	
1,2 DICHOLORBENZEN	14,000 (1998)	50	200	9.06	N/A	50	
1,3 DICHOLORBENZEN	2,300 (1998)	50	200	9.06	N/A	50	
1,4 DICHOLORBENZEN	11,000(1998)	75	150	8.98	N/A	75	
1,2 DICHLOROPROPANE	19(1997)	75	400	10.87	N/A	75	
VINYL CHLORIDE	2.6(1997)	1	NONE	9.99	N/A	1	
1,2 DICHLOROTHEANE	38.9(1997)	50	50	11.05	N/A	50	
Historic fill (Coal Tar)	Various	Various	Various	Various	N/A	Various	

NA = Not Available NE = None Established U = Unknown

* - NIOSH and/or ACGIH listings for contaminants are included in Attachment HASP-4.
- MSDS are in Attachment HASP-5

Toxic Material Concentration/Exposure Potential:

(X) Low ( ) Medium ( ) High ( ) Unknown

Fire/Explosion Potential:

(X) Low ( ) Medium ( ) High ( ) Unknown

Overall Hazard Evaluation:

(X) Low ( ) Medium ( ) High ( ) Unknown

Justification: Low level in ground water and soil.

Required Training for Site Personnel:

• 40-hr OSHA for field technicians & supervisors with 8 hours annual update.

Task Description (Describe Major Tasks from Page One - Attach additional pages if necessary.)

#1 AS/SVE well point installation

#2 Trenching & horizontal SVE line installation

#3 Monitoring well sampling

#4

#5

Personal Protective Equipment Required for Tasks Described Above.

Task	Level (Circle One)
#1	A B C D
#2	A B C D
#3	A B C D
#4	A B C D
#5	A B C D

Description of PPE included in Attachment 3. Modified PPE is as follows:

Field Monitoring Equipment (Check under appropriate column.)

Task #	Not Needed	LEL Meter	10.6 eV PID	11.7 eV PID	FID	Detector Tubes	Other (Describe)
#1			X				
#2			X				
#3			X				
#4							
#5							

Action Levels for PPE Upgrade (Describe):

PID readings of greater than 1,000 units above background in the breathing zone require upgrade to Level C.

DECONTAMINATION INFORMATION

Attach Site map indicating exclusion, decontamination, and support zones.

Personnel Decontamination (Describe/or attach diagram.) ( ) Not Needed

See Attachment 2 Wash with soap and water

Sampling Equipment Decontamination (Describe/or attach diagram.) ( ) Not Needed

See Attachment 2

Heavy Equipment Decontamination (Describe/or attach diagram) ( ) Not Needed

See Attachment 2

Disposal Method for Liquids and Solids (Describe/or attach diagram) ( ) Not Needed

See Attachment 2

CONTINGENCY INFORMATION

Site Emergency Contact to be Notified:

Location of Nearest Telephone:

Local Emergency Response Contacts:	**Name**	**Phone**
Ambulance/EMS:		911 or
Fire Department:		911 or
Sheriff/Police Dept:		911
Whitman Project Manager:	Rich Britton	(732) 390-5858
NY Department of Environmental Commission Hotline		1-800-847-7332
USEPA Environmental Response Team		(202)-321-6660
USEPA RCRA Hotline		(800) 424-9346
CHEMTREC		(800)-424-9300
National Response Center		(800) 424-8802
Substance Identification (CAS)		(800) 848-6538
Nearest Local Hospital:	Albert Einstein-Weiler Hospital	718-904-2000
Hospital Address:	1825 Eastchester Road, Bronx, NY 10461	
Route to Hospital:	Hospital Route	

Contingency Plans - Summarize Below

PERSONAL HYGIENE

The Whitman Companies or Contractors personnel have the following personal hygiene requirement:

1. No eating, drinking, smoking, gum or tobacco chewing is allowed in the active work zone.
2. Wash hands and face before leaving work area.
3. Contact with contaminated surface or surfaces suspected of being contaminated will be avoided while unprotected.
4. Any person under a physician's care and/or taking medication must inform the site supervisor.
5. Personnel using respirators must be fit tested, clean shaven and trained in respiratory protection.

MEDICAL SURVEILLANCE PROGRAM

See Health and Safety Officer for Standard list of medical surveillance program. Additionally medical surveillance above the Standard will include:

EMERGENCY/PROBLEMS CHAIN-OF-COMMAND

If a release, emergency or other unexpected situation arises onsite, The Whitman Companies should be notified immediately. If The Whitman Companies, Inc. is not on site when the event occurs, please use the following contact list.

Name	Office # and Address	Home #
Richard Britton, Vice President of Geological Services	The Whitman Companies, Inc. 116 Tices Lane, Unit B-1 East Brunswick, NJ 08816 (732) 390-5858	732-940-9225
Todd Gerber, Executive Vice President	The Whitman Companies, Inc. 116 Tices Lane, Unit B-1 East Brunswick, NJ 08816 (732) 390-5858	(908)-281-6551

Active Work Zone Emergencies

Fire/Explosion: A severe emergency such as a fire or explosion could require immediate evacuation of the site. The emergency response notification process should take place as soon as an incident occurs.

In the event of an evacuation of the Active Work Area, affected personnel will leave immediately, go through decontamination if time permits and reassemble at the closest street. The signal for an evacuation is three (3) long bursts of an air or vehicle horn. Contact local emergency services if needed and contact The Whitman Companies.

Emergency Spill Containment/Control Plan

Spill/Release: Upon a detected spill or release of a hazardous substance or waste, there must be notification to the state (NJDEP), Local Authorities, client, and The Whitman Companies. Spills/Releases should be contained where possible by diking or otherwise isolating the spill/release. If necessary, an emergency response contractor will be contacted to provide assistance. If product is encountered during soil investigation activities, there must be notification to The Whitman Companies.

In the event of a spill or leak of a liquid chemical or hazardous waste, personnel in the area of the spill will do the following:

- Inform the Site Supervisor immediately
- Determine if adequate protective equipment is available to enter area of the spill i.e., IDLH conditions
- Get spill kit materials
- Identify source of spill
- Contain, absorb and recover spilled substance in proper containers
- Dispose of spilled materials properly, according to local, state and federal regulations

Spill Prevention

The prevention of spills through good work practice is the most important aspect of the spill containment/control plan. The following standard work practices for material handling will minimize the potential for spills.

- All drums and containers used during the cleanup shall meet the appropriate DOT, OSHA and EPA regulations for the wastes that they will contain.
- Drums and containers shall be inspected and their integrity assured prior to moving them. Drums or containers that cannot be inspected before being moved because of storage conditions shall be positioned in an accessible location and inspected prior to further handling.
- Operations on site will be organized so as to minimize the amount of drum or container movement.
- Where spills, leaks, or ruptures may occur, adequate quantities of spill containment equipment will be stationed in the immediate area. The spill containment program must be sufficient to contain and isolate the entire volume of hazardous substances being transferred.
- Drums or containers that cannot be moved without rupture, leakage, or spills, shall be emptied into a sound container.
- Fire extinguishing equipment meeting 29 CFR 1910 Subpart L shall be on hand ready for use to control fires.

COMMUNITY AIR MONITORING PLAN

Real-time air monitoring for volatile organic compounds (VOCs) and/or particulate levels at the perimeter of the exclusion zone or work area will be necessary. Continuous monitoring will be required for all ground intrusive activities. Ground intrusive activities include, but are not limited to, soil/waste excavation and handling, test pitting or trenching, and the installation of soil borings or monitoring wells.

Periodic monitoring for VOCs will be required during non-intrusive activities such as the collection of soil or groundwater samples from existing monitoring wells. "Periodic" monitoring during sample collection might reasonably consist of taking a reading upon arrival at a sample location, monitoring while opening a well cap or overturning soil, monitoring during well baling/purging, and taking a reading prior to leaving a sample location.

VOC Monitoring, Response Levels, and Actions

Volatile organic compounds (VOCs) must be monitored at the downwind perimeter of the immediate work area (i.e., the exclusion zone) on a continuous basis or as otherwise specified. Upwind concentrations should be measured at the start of each workday and periodically thereafter to establish background conditions. The monitoring work should be performed using equipment appropriate to measure the types of contaminants known or suspected to be present. The equipment should be calibrated at least daily for the contaminant(s) of concern or for an appropriate surrogate. The equipment should be capable of calculating 15-minute running average concentrations, which will be compared to the levels specified below.

- If the ambient air concentration of total organic vapors at the downwind perimeter of the work area or exclusion zone exceeds 5 parts per million (ppm) above background for the 15-minute average, work activities must be temporarily halted and monitoring continued. If the total organic vapor level readily decreases (per instantaneous readings) below 5 ppm over background, work activities can resume with continued monitoring.
- If total organic vapor levels at the downwind perimeter of the work area or exclusion zone persist at levels in excess of 5 ppm over background but less than 25 ppm, work activities must be halted, the source of vapors identified, corrective actions taken to abate emissions, and monitoring continued. After these steps, work activities can resume provided that the total organic vapor level 200 feet downwind of the exclusion zone or half the distance to the nearest potential receptor or residential/commercial structure, whichever is less - but in no case less than 20 feet, is below 5 ppm over background for the 15-minute average.
- If the organic vapor level is above 25 ppm at the perimeter of the work area, activities must be shutdown.

All 15-minute readings must be recorded and be available for State (DEC and DOH) personnel to review. Instantaneous readings, if any, used for decision purposes should also be recorded.

Particulate Monitoring, Response Levels, and Actions

Particulate concentrations should be monitored continuously at the upwind and downwind perimeters of the exclusion zone at temporary particulate monitoring stations. The particulate monitoring should be performed using real-time monitoring equipment capable of measuring particulate matter less than 10 micrometers in size (PM-10) and capable of integrating over a period of 15 minutes (or less) for comparison to the airborne particulate action level. The equipment must be equipped with an audible alarm to indicate exceedance of the action level. In addition, fugitive dust migration should be visually assessed during all work activities.

- If the downwind PM-10 particulate level is 100 micrograms per cubic meter (mcg/m3) greater than background (upwind perimeter) for the 15-minute period or if airborne dust is observed leaving the work area, then dust suppression techniques must be employed. Work may continue with dust suppression techniques provided that downwind PM-10 particulate levels do not exceed 150 mcg/m3 above the upwind level and provided that no visible dust is migrating from the work area.

- If, after implementation of dust suppression techniques, downwind PM-10 particulate levels are greater than 150 mcg/m3 above the upwind level, work must be stopped and a re-evaluation of activities initiated. Work can resume provided that dust suppression measures and other controls are successful in reducing the downwindPM-10 particulate concentration to within 150 mcg/m3 of the upwind level and in preventing visible dust migration. All readings must be recorded and be available for State (DEC and DOH) personnel to review.

PLAN REVISIONS

The site Health and Safety Plan will be revised whenever the following events occur:

1. The Plan fails in an emergency
2. New physical or chemical hazards are discovered
3. Changes occur in telephone numbers, personnel, etc.

All personnel will be briefed when pertinent changes occur.

Project Manager Approval _____ Date: _____

HEALTH & SAFETY SUMMARY SHEET

1. ACTIVITIES

(See attached scope of work.)

2. PRINCIPAL HAZARDS

(See attached scope of work.)

3. PPE EQUIPMENT

(See attached scope of work.)

4. HOSPITAL & EMERGENCY NUMBERS

(See attached scope of work.)

5. H & S BRIEFING

The Whitman Field Supervisor will coordinate a health & safety briefing prior to the beginning of the day's work activities. This briefing must be given to **all** Whitman personnel **and** Whitman subcontractors working on-site and will include a summary of all the information contained in this Health & Safety Plan.

6. SIGNOFF SHEETS

All personnel attending the health and safety briefing will sign the Health & Safety Plan Signoff Sheet. Copies of the completed Signoff Sheet must be forwarded to the Whitman Office Safety & Health Coordinator and to the main Whitman file on the project.

ATTACHMENT HASP-1

ROUTE TO HOSPITAL

Yahoo! Driving Directions

Starting from: A 845 Edgewater Rd, Bronx, NY 10474-4901

Arriving at: B 1825 Eastchester Rd, Bronx, NY 10461-2301

Distance: 5.3 miles **Approximate Travel Time:** 11 mins

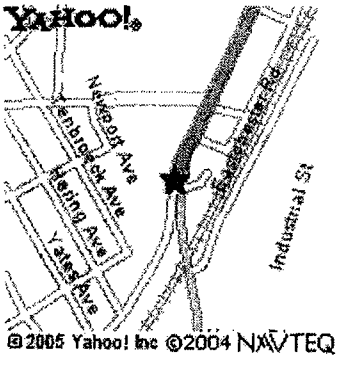
Your Directions

1.	Start at **845 EDGEWATER RD, BRONX** going toward **SENECA AVE** - go **0.3** mi
2.	Turn R on **BRUCKNER BLVD** - go **0.7** mi
3.	Bear R onto **BRONX RIVER PKY NORTH** toward **WHITE PLAINS** - go **2.2** mi
4.	Take exit **#7E/PELHAM PKWY** onto **BRONX AND PELHAM PKY E** - go **1.3** mi
5.	Continue on **PELHAM PKY S** - go **0.3** mi
6.	Turn R on **EASTCHESTER RD** - go **0.5** mi
7.	Continue on a local road - go < **0.1** mi
8.	Arrive at **1825 EASTCHESTER RD, BRONX**

When using any driving directions or map, it's a good idea to do a reality check and make sure the road still exists, watch out for construction, and follow all traffic safety precautions. This is only to be used as an aid in planning.

Your Full Route

Your Destination



Address:
1825 Eastchester Rd
Bronx, NY 10461-2301

ATTACHMENTHASP-2

DECONTAMINATION PROCEDURES

A. NON-AQUEOUS SAMPLING EQUIPMENT[1]

1. Detergent and tap water - scrub to remove visual contamination.
2. Generous tap water rinse.
3. Distilled and deionized water rinse.

B. AQUEOUS SAMPLING EQUIPMENT

1. Detergent and tap water wash.
2. Generous tap water rinse.
3. Distilled and deionized water rinse.
4. 10% nitric acid rinse[2].
5. Distilled and deionized water rinse[1].
6. Acetone rinse[3].
7. Total air dry or nitrogen blow out[3].
8. Distilled and deionized water rinse[2].

[1] – If visual contamination persists or gross contamination is suspected, the full 8 step decontamination procedure in Item B is required.

[2] - Only if sample is to be analyzed for metals.

[3] - Only if sample is to be analyzed for organics.

ATTACHMENT HASP-3

PERSONAL PROTECTIVE EQUIPMENT LEVELS

LEVEL D Includes:

1. Boots/shoes, chemical-resistant steel toe and shank.
2. Boots, outer, chemical-resistant (disposable).*
3. Safety glasses or chemical splash goggles.
4. Coveralls.*
5. Hard hat.
6. Escape mask.*
7. Face Shield.*

LEVEL C Includes:

1. All of Level D equipment.
2. Full-face or half-mask, air purifying respirators (NIOSH approved).
3. Hooded chemical-resistant clothing (overalls; two-piece chemical-splash suit; disposable chemical-resistant overalls).
4. Gloves, outer, chemical-resistant.
5. Gloves, inner, chemical-resistant.

LEVEL B Includes:

1. Positive pressure, full-facepiece self-contained breathing apparatus (SCBA), or positive pressure supplied air respirator with escape SCBA (NIOSH approved).
2. Hooded chemical-resistant clothing (overalls and long-sleeved jacket; coveralls; one or two-piece chemical-splash suit; disposable chemical-resistant overalls).
3. Coveralls. *
4. Gloves, outer, chemical-resistant.
5. Gloves, inner, chemical-resistant.
6. Boots, outer, chemical-resistant, steel toe and shank.
7. Boot-covers, outer, chemical resistant (disposable).*
8. Hard hat.
9. Face shield.*

LEVEL A Includes:

1. All of level B equipment.
2. Totally encapsulating chemical-protective suit.
3. Long underwear.*

* optional equipment (Project Managers decision).

NIOSH Pocket Guide to Chemical Hazards

Benzene

CAS 71-43-2

C_6H_6

RTECS CY1400000

Synonyms & Trade Names
Benzol, Phenyl hydride

DOT ID & Guide
1114 130

Exposure Limits

NIOSH REL: Ca TWA 0.1 ppm ST 1 ppm See Appendix A

OSHA PEL: [1910.1028] TWA 1 ppm ST 5 ppm See Appendix F

IDLH Ca [500 ppm] See: 71432

Conversion 1 ppm = 3.19 mg/m^3

Physical Description
Colorless to light-yellow liquid with an aromatic odor. [Note: A solid below 42°F.]

MW: 78.1	BP: 176°F	FRZ: 42°F	Sol: 0.07%
VP: 75 mmHg	IP: 9.24 eV		Sp.Gr: 0.88
Fl.P: 12°F	UEL: 7.8%	LEL: 1.2%	

Class IB Flammable Liquid: Fl.P. below 73°F and BP at or above 100°F.

Incompatibilities & Reactivities
Strong oxidizers, many fluorides & perchlorates, nitric acid

Measurement Methods
NIOSH 1500, 1501, 3700, 3800; OSHA 12, 1005
See: NMAM or OSHA Methods

Personal Protection & Sanitation
Skin: Prevent skin contact
Eyes: Prevent eye contact
Wash skin: When contaminated
Remove: When wet (flammable)
Change: No recommendation
Provide: Eyewash, Quick drench

First Aid (See procedures)
Eye: Irrigate immediately
Skin: Soap wash immediately
Breathing: Respiratory support
Swallow: Medical attention immediately

Important additional information about respirator selection
Respirator Recommendations NIOSH
At concentrations above the NIOSH REL, or where there is no REL, at any detectable concentration: (APF = 10,000) Any self-contained breathing apparatus that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode/(APF = 10,000) Any supplied-air respirator that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode in combination with an auxiliary self-contained positive-pressure breathing apparatus
Escape: (APF = 50) Any air-purifying, full-facepiece respirator (gas mask) with a chin-style, front- or back-mounted organic vapor canister/Any appropriate escape-type, self-contained breathing apparatus

Exposure Routes inhalation, skin absorption, ingestion, skin and/or eye contact

Symptoms Irritation eyes, skin, nose, respiratory system; dizziness; headache, nausea, staggered gait; anorexia, lassitude (weakness, exhaustion); dermatitis; bone marrow depression; [potential occupational carcinogen]

Target Organs Eyes, skin, respiratory system, blood, central nervous system, bone marrow

Cancer Site [leukemia]

See also: INTRODUCTION See ICSC CARD: 0015 See MEDICAL TESTS: 0022

NIOSH Pocket Guide to Chemical Hazards

Chlorobenzene

CAS 108-90-7

C_6H_5Cl

RTECS CZ0175000

Synonyms & Trade Names
Benzene chloride, Chlorobenzol, MCB, Monochlorobenzene, Phenyl chloride

DOT ID & Guide
1134 130

Exposure Limits

NIOSH REL: See Appendix D

OSHA PEL: TWA 75 ppm (350 mg/m^3)

IDLH 1000 ppm See: 108907

Conversion 1 ppm = 4.61 mg/m^3

Physical Description
Colorless liquid with an almond-like odor.

MW: 112.6	BP: 270°F	FRZ: -50°F	Sol: 0.05%
VP: 9 mmHg	IP: 9.07 eV		Sp.Gr: 1.11
Fl.P: 82°F	UEL: 9.6%	LEL: 1.3%	

Class IC Flammable Liquid: Fl.P. at or above 73°F and below 100°F.

Incompatibilities & Reactivities
Strong oxidizers

Measurement Methods
NIOSH 1003; OSHA 7
See: NMAM or OSHA Methods

Personal Protection & Sanitation
Skin: Prevent skin contact
Eyes: Prevent eye contact
Wash skin: When contaminated
Remove: When wet (flammable)
Change: No recommendation

First Aid (See procedures)
Eye: Irrigate immediately
Skin: Soap wash promptly
Breathing: Respiratory support
Swallow: Medical attention immediately

Important additional information about respirator selection

Respirator Recommendations OSHA

Up to 1000 ppm: (APF = 25) Any supplied-air respirator operated in a continuous-flow mode[£]/(APF = 25) Any powered, air-purifying respirator with organic vapor cartridge(s)[£]/(APF = 50) Any chemical cartridge respirator with a full facepiece and organic vapor cartridge(s)/(APF = 50) Any air-purifying, full-facepiece respirator (gas mask) with a chin-style, front- or back-mounted organic vapor canister/(APF = 50) Any self-contained breathing apparatus with a full facepiece/(APF = 50) Any supplied-air respirator with a full facepiece

Emergency or planned entry into unknown concentrations or IDLH conditions: (APF = 10,000) Any self-contained breathing apparatus that has a full facepiece and is operated in a pressure- demand or other positive-pressure mode/(APF = 10,000) Any supplied-air respirator that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode in combination with an auxiliary self-contained positive-pressure breathing apparatus

Escape: (APF = 50) Any air-purifying, full-facepiece respirator (gas mask) with a chin-style, front- or back-mounted organic vapor canister/Any appropriate escape-type, self-contained breathing apparatus

Exposure Routes inhalation, ingestion, skin and/or eye contact

Symptoms Irritation eyes, skin, nose; drowsiness, incoordination; central nervous system depression; in animals: liver, lung, kidney injury

Target Organs Eyes, skin, respiratory system, central nervous system, liver

See also: INTRODUCTION See ICSC CARD: 0642

NIOSH Pocket Guide to Chemical Hazards

p-Dichlorobenzene

CAS 106-46-7

$C_6H_4Cl_2$

RTECS CZ4550000

Synonyms & Trade Names
p-DCB; 1,4-Dichlorobenzene; para-Dichlorobenzene; Dichlorocide

DOT ID & Guide
1592 152

Exposure Limits

NIOSH REL: Ca See Appendix A

OSHA PEL†: TWA 75 ppm (450 mg/m^3)

IDLH Ca [150 ppm] See: 106467

Conversion 1 ppm = 6.01 mg/m^3

Physical Description
Colorless or white crystalline solid with a mothball-like odor. [insecticide]

MW: 147.0	BP: 345°F	MLT: 128°F	Sol: 0.008%
VP: 1.3 mmHg	IP: 8.98 eV		Sp.Gr: 1.25
Fl.P: 150°F	UEL: ?	LEL: 2.5%	

Combustible Solid, but may take some effort to ignite.

Incompatibilities & Reactivities
Strong oxidizers (such as chlorine or permanganate)

Measurement Methods
NIOSH 1003; OSHA 7
See: NMAM or OSHA Methods

Personal Protection & Sanitation
Skin: Prevent skin contact
Eyes: Prevent eye contact
Wash skin: When contaminated/Daily
Remove: When wet or contaminated
Change: Daily
Provide: Eyewash, Quick drench

First Aid (See procedures)
Eye: Irrigate immediately
Skin: Soap wash
Breathing: Respiratory support
Swallow: Medical attention immediately

Important additional information about respirator selection
Respirator Recommendations NIOSH
At concentrations above the NIOSH REL, or where there is no REL, at any detectable concentration: (APF = 10,000) Any self-contained breathing apparatus that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode/(APF = 10,000) Any supplied-air respirator that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode in combination with an auxiliary self-contained positive-pressure breathing apparatus
Escape: (APF = 50) Any air-purifying, full-facepiece respirator (gas mask) with a chin-style, front- or back-mounted organic vapor canister/Any appropriate escape-type, self-contained breathing apparatus

Exposure Routes inhalation, skin absorption, ingestion, skin and/or eye contact

Symptoms Eye irritation, swelling periorbital (situated around the eye); profuse rhinitis; headache, anorexia, nausea, vomiting; weight loss, jaundice, cirrhosis; in animals: liver, kidney injury; [potential occupational carcinogen]

Target Organs Liver, *respiratory system, eyes, kidneys, skin*

Cancer Site [in animals: liver & kidney cancer]

See also: INTRODUCTION See ICSC CARD: 0037 See MEDICAL TESTS: 0073

NIOSH Pocket Guide to Chemical Hazards

o-Dichlorobenzene

CAS 95-50-1

$C_6H_4Cl_2$

RTECS CZ4500000

Synonyms & Trade Names
o-DCB; 1,2-Dichlorobenzene; ortho-Dichlorobenzene; o-Dichlorobenzol

DOT ID & Guide
1591 152

Exposure Limits

NIOSH REL: C 50 ppm (300 mg/m^3)

OSHA PEL: C 50 ppm (300 mg/m^3)

IDLH 200 ppm See: 95501

Conversion 1 ppm = 6.01 mg/m^3

Physical Description
Colorless to pale-yellow liquid with a pleasant, aromatic odor. [herbicide]

MW: 147.0	BP: 357°F	FRZ: 1°F	Sol: 0.01%
VP: 1 mmHg	IP: 9.06 eV		Sp.Gr: 1.30
Fl.P: 151°F	UEL: 9.2%	LEL: 2.2%	

Class IIIA Combustible Liquid: Fl.P. at or above 140°F and below 200°F.

Incompatibilities & Reactivities
Strong oxidizers, aluminum, chlorides, acids, acid fumes

Measurement Methods
NIOSH 1003; OSHA 7
See: NMAM or OSHA Methods

Personal Protection & Sanitation
Skin: Prevent skin contact
Eyes: Prevent eye contact
Wash skin: When contaminated
Remove: When wet or contaminated
Change: No recommendation

First Aid (See procedures)
Eye: Irrigate immediately
Skin: Soap wash promptly
Breathing: Respiratory support
Swallow: Medical attention immediately

Important additional information about respirator selection
Respirator Recommendations NIOSH/OSHA
Up to 200 ppm: (APF = 50) Any chemical cartridge respirator with a full facepiece and organic vapor cartridge(s)/(APF = 25) Any powered, air-purifying respirator with organic vapor cartridge(s)[£]/(APF = 50) Any self-contained breathing apparatus with a full facepiece/(APF = 50) Any supplied-air respirator with a full facepiece
Emergency or planned entry into unknown concentrations or IDLH conditions: (APF = 10,000) Any self-contained breathing apparatus that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode/(APF = 10,000) Any supplied-air respirator that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode in combination with an auxiliary self-contained positive-pressure breathing apparatus
Escape: (APF = 50) Any air-purifying, full-facepiece respirator (gas mask) with a chin-style, front- or back-mounted organic vapor canister/Any appropriate escape-type, self-contained breathing apparatus

Exposure Routes inhalation, skin absorption, ingestion, skin and/or eye contact

Symptoms Irritation eyes, nose; liver, kidney damage; skin blisters

Target Organs Eyes, skin, respiratory system, liver, kidneys

See also: INTRODUCTION See ICSC CARD: 1066

NIOSH Pocket Guide to Chemical Hazards

Ethylene dichloride

CAS 107-06-2

$ClCH_2CH_2Cl$

RTECS KI0525000

Synonyms & Trade Names
1,2-Dichloroethane; Ethylene chloride; Glycol dichloride

DOT ID & Guide
1184 129

Exposure Limits

NIOSH REL: Ca TWA 1 ppm (4 mg/m^3) ST 2 ppm (8 mg/m^3) See Appendix A See Appendix C (Chloroethanes)

OSHA PEL†: TWA 50 ppm C 100 ppm 200 ppm [5-minute maximum peak in any 3 hours]

IDLH Ca [50 ppm] See: 107062

Conversion 1 ppm = 4.05 mg/m^3

Physical Description
Colorless liquid with a pleasant, chloroform-like odor. [Note: Decomposes slowly, becomes acidic & darkens in color.]

MW: 99.0	BP: 182°F	FRZ: -32°F	Sol: 0.9%
VP: 64 mmHg	IP: 11.05 eV		Sp.Gr: 1.24
Fl.P: 56°F	UEL: 16%	LEL: 6.2%	

Class IB Flammable Liquid: Fl.P. below 73°F and BP at or above 100°F.

Incompatibilities & Reactivities
Strong oxidizers & caustics; chemically-active metals such as magnesium or aluminum powder, sodium & potassium; liquid ammonia [Note: Decomposes to vinyl chloride & HCl above 1112°F.]

Measurement Methods
NIOSH 1003; OSHA 3
See: NMAM or OSHA Methods

Personal Protection & Sanitation
Skin: Prevent skin contact
Eyes: Prevent eye contact
Wash skin: When contaminated
Remove: When wet (flammable)
Change: No recommendation
Provide: Eyewash, Quick drench

First Aid (See procedures)
Eye: Irrigate immediately
Skin: Soap wash promptly
Breathing: Respiratory support
Swallow: Medical attention immediately

Important additional information about respirator selection
Respirator Recommendations NIOSH
At concentrations above the NIOSH REL, or where there is no REL, at any detectable concentration: (APF = 10,000) Any self-contained breathing apparatus that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode/(APF = 10,000) Any supplied-air respirator that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode in combination with an auxiliary self-contained positive-pressure breathing apparatus
Escape: (APF = 50) Any air-purifying, full-facepiece respirator (gas mask) with a chin-style, front- or back-mounted organic vapor canister/Any appropriate escape-type, self-contained breathing apparatus

Exposure Routes inhalation, ingestion, skin absorption, skin and/or eye contact

Symptoms Irritation eyes, corneal opacity; central nervous system depression; nausea, vomiting; dermatitis; liver, kidney, cardiovascular system damage; [potential occupational carcinogen]

Target Organs Eyes, skin, kidneys, liver, central nervous system, cardiovascular system

Cancer Site [in animals: forestomach, mammary gland & circulatory system cancer]

See also: INTRODUCTION See ICSC CARD: 0250 See MEDICAL TESTS: 0104

NIOSH Pocket Guide to Chemical Hazards

Propylene dichloride

CAS 78-87-5

$CH_3CHClCH_2Cl$

RTECS TX9625000

Synonyms & Trade Names
Dichloro-1,2-propane; 1,2-Dichloropropane

DOT ID & Guide
1279 130

Exposure Limits

NIOSH REL: Ca See Appendix A

OSHA PEL†: TWA 75 ppm (350 mg/m^3)

IDLH Ca [400 ppm] See: 78875

Conversion 1 ppm = 4.62 mg/m^3

Physical Description
Colorless liquid with a chloroform-like odor. [pesticide]

MW: 113.0	BP: 206°F	FRZ: -149°F	Sol: 0.3%
VP: 40 mmHg	IP: 10.87 eV		Sp.Gr: 1.16
Fl.P: 60°F	UEL: 14.5%	LEL: 3.4%	

Class IB Flammable Liquid: Fl.P. below 73°F and BP at or above 100°F.

Incompatibilities & Reactivities
Strong oxidizers, strong acids, active metals

Measurement Methods
NIOSH 1013; OSHA 7
See: NMAM or OSHA Methods

Personal Protection & Sanitation
Skin: Prevent skin contact
Eyes: Prevent eye contact
Wash skin: When contaminated
Remove: When wet (flammable)
Change: No recommendation
Provide: Eyewash, Quick drench

First Aid (See procedures)
Eye: Irrigate immediately
Skin: Soap wash promptly
Breathing: Respiratory support
Swallow: Medical attention immediately

Important additional information about respirator selection
Respirator Recommendations NIOSH
At concentrations above the NIOSH REL, or where there is no REL, at any detectable concentration: (APF = 10,000) Any self-contained breathing apparatus that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode/(APF = 10,000) Any supplied-air respirator that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode in combination with an auxiliary self-contained positive-pressure breathing apparatus
Escape: (APF = 50) Any air-purifying, full-facepiece respirator (gas mask) with a chin-style, front- or back-mounted organic vapor canister/Any appropriate escape-type, self-contained breathing apparatus

Exposure Routes inhalation, skin absorption, ingestion, skin and/or eye contact

Symptoms Irritation eyes, skin, respiratory system; drowsiness, dizziness; liver, kidney damage; in animals: central nervous system depression; [potential occupational carcinogen]

Target Organs Eyes, skin, respiratory system, liver, kidneys, central nervous system

Cancer Site [in animals: liver & mammary gland tumors]

See also: INTRODUCTION See ICSC CARD: 0441

NIOSH Pocket Guide to Chemical Hazards

Naphthalene

CAS 91-20-3

$C_{10}H_8$

RTECS QJ0525000

Synonyms & Trade Names
Naphthalin, Tar camphor, White tar

DOT ID & Guide
1334 133 (crude or refined)
2304 133 (molten)

Exposure Limits

NIOSH REL: TWA 10 ppm (50 mg/m^3) ST 15 ppm (75 mg/m^3)

OSHA PEL†: TWA 10 ppm (50 mg/m^3)

IDLH 250 ppm See: 91203

Conversion 1 ppm = 5.24 mg/m^3

Physical Description
Colorless to brown solid with an odor of mothballs. [Note: Shipped as a molten solid.]

MW: 128.2	BP: 424°F	MLT: 176°F	Sol: 0.003%
VP: 0.08 mmHg	IP: 8.12 eV		Sp.Gr: 1.15
Fl.P: 174°F	UEL: 5.9%	LEL: 0.9%	

Combustible Solid, but will take some effort to ignite.

Incompatibilities & Reactivities
Strong oxidizers, chromic anhydride

Measurement Methods
NIOSH 1501; OSHA 35
See: NMAM or OSHA Methods

Personal Protection & Sanitation
Skin: Prevent skin contact
Eyes: Prevent eye contact
Wash skin: When contaminated
Remove: When wet or contaminated
Change: Daily

First Aid (See procedures)
Eye: Irrigate immediately
Skin: Molten flush immediately/solid-liquid soap wash promptly
Breathing: Respiratory support
Swallow: Medical attention immediately

Important additional information about respirator selection
Respirator Recommendations NIOSH/OSHA
Up to 100 ppm: (APF = 10) Any chemical cartridge respirator with organic vapor cartridge(s) in combination with a dust and mist filter*/(APF = 10) Any supplied-air respirator*
Up to 250 ppm: (APF = 25) Any supplied-air respirator operated in a continuous-flow mode*/(APF = 50) Any chemical cartridge respirator with a full facepiece and organic vapor cartridge(s) in combination with a high-efficiency particulate filter/(APF = 25) Any powered, air-purifying respirator with organic vapor cartridge(s) in combination with a dust and mist filter*/(APF = 50) Any self-contained breathing apparatus with a full facepiece/(APF = 50) Any supplied-air respirator with a full facepiece
Emergency or planned entry into unknown concentrations or IDLH conditions: (APF = 10,000) Any self-contained breathing apparatus that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode/(APF = 10,000) Any supplied-air respirator that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode in combination with an auxiliary self-contained positive-pressure breathing apparatus
Escape: (APF = 50) Any air-purifying, full-facepiece respirator (gas mask) with a chin-style, front- or back-mounted organic vapor canister having a high-efficiency particulate filter/Any appropriate escape-type, self-contained breathing apparatus

Exposure Routes inhalation, skin absorption, ingestion, skin and/or eye contact

Symptoms Irritation eyes; headache, confusion, excitement, malaise (vague feeling of discomfort); nausea, vomiting, abdominal pain; irritation bladder; profuse sweating; jaundice; hematuria (blood in the urine), renal shutdown; dermatitis, optical neuritis, corneal damage

Target Organs Eyes, skin, blood, liver, kidneys, central nervous system

See also: INTRODUCTION See ICSC CARD: 0667 See MEDICAL TESTS: 0152

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Toluene

CAS 108-88-3

$C_6H_5CH_3$

RTECS XS5250000

Synonyms & Trade Names
Methyl benzene, Methyl benzol, Phenyl methane, Toluol

DOT ID & Guide
1294 130

Exposure Limits

NIOSH REL: TWA 100 ppm (375 mg/m^3) ST 150 ppm (560 mg/m^3)

OSHA PEL†: TWA 200 ppm C 300 ppm 500 ppm (10-minute maximum peak)

IDLH 500 ppm See: 108883

Conversion 1 ppm = 3.77 mg/m^3

Physical Description
Colorless liquid with a sweet, pungent, benzene-like odor.

MW: 92.1	BP: 232°F	FRZ: -139°F	Sol(74°F): 0.07%
VP: 21 mmHg	IP: 8.82 eV		Sp.Gr: 0.87
Fl.P: 40°F	UEL: 7.1%	LEL: 1.1%	

Class IB Flammable Liquid: Fl.P. below 73°F and BP at or above 100°F.

Incompatibilities & Reactivities
Strong oxidizers

Measurement Methods
NIOSH 1500, 1501, 3800, 4000; OSHA 111
See: NMAM or OSHA Methods

Personal Protection & Sanitation
Skin: Prevent skin contact
Eyes: Prevent eye contact
Wash skin: When contaminated
Remove: When wet (flammable)
Change: No recommendation

First Aid (See procedures)
Eye: Irrigate immediately
Skin: Soap wash promptly
Breathing: Respiratory support
Swallow: Medical attention immediately

Important additional information about respirator selection
Respirator Recommendations NIOSH
Up to 500 ppm: (APF = 10) Any chemical cartridge respirator with organic vapor cartridge(s)*/(APF = 25) Any powered, air-purifying respirator with organic vapor cartridge(s)*/(APF = 50) Any air-purifying, full-facepiece respirator (gas mask) with a chin-style, front- or back-mounted organic vapor canister/(APF = 10) Any supplied-air respirator*/(APF = 50) Any self-contained breathing apparatus with a full facepiece
Emergency or planned entry into unknown concentrations or IDLH conditions: (APF = 10,000) Any self-contained breathing apparatus that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode/(APF = 10,000) Any supplied-air respirator that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode in combination with an auxiliary self-contained positive-pressure breathing apparatus
Escape: (APF = 50) Any air-purifying, full-facepiece respirator (gas mask) with a chin-style, front- or back-mounted organic vapor canister/Any appropriate escape-type, self-contained breathing apparatus

Exposure Routes inhalation, skin absorption, ingestion, skin and/or eye contact

Symptoms Irritation eyes, nose; lassitude (weakness, exhaustion), confusion, euphoria, dizziness, headache; dilated pupils, lacrimation (discharge of tears); anxiety, muscle fatigue, insomnia; paresthesia; dermatitis; liver, kidney damage

Target Organs Eyes, skin, respiratory system, central nervous system, liver, kidneys

See also: INTRODUCTION See ICSC CARD: 0078 See MEDICAL TESTS: 0232

NIOSH Pocket Guide to Chemical Hazards

1,2,4-Trichlorobenzene

CAS 120-82-1

$C_6H_3Cl_3$

RTECS DC2100000

Synonyms & Trade Names
unsym-Trichlorobenzene; 1,2,4-Trichlorobenzol

DOT ID & Guide
2321 153 (liquid)

Exposure Limits

NIOSH REL: C 5 ppm (40 mg/m^3)

OSHA PEL†: none

IDLH N.D. See: IDLH INDEX

Conversion 1 ppm = 7.42 mg/m^3

Physical Description
Colorless liquid or crystalline solid (below 63°F) with an aromatic odor.

MW: 181.4	BP: 416°F	FRZ: 63°F	Sol: 0.003%
VP: 1 mmHg	IP: ?		Sp.Gr: 1.45
Fl.P: 222°F	UEL(302°F): 6.6%	LEL(302°F): 2.5%	

Class IIIB Combustible Liquid
Combustible Solid

Incompatibilities & Reactivities
Acids, acid fumes, oxidizers, steam

Measurement Methods
NIOSH 5517
See: NMAM or OSHA Methods

Personal Protection & Sanitation
Skin: Prevent skin contact
Eyes: Prevent eye contact
Wash skin: When contaminated
Remove: When wet or contaminated
Change: No recommendation

First Aid (See procedures)
Eye: Irrigate immediately
Skin: Soap wash
Breathing: Respiratory support
Swallow: Medical attention immediately

Important additional information about respirator selection
Respirator Recommendations To be added later

Exposure Routes inhalation, skin absorption, ingestion, skin and/or eye contact

Symptoms Irritation eyes, skin, mucous membrane; in animals: liver, kidney damage; possible teratogenic effects

Target Organs Eyes, skin, respiratory system, liver, reproductive system

See also: INTRODUCTION See ICSC CARD: 1049

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NIOSH Pocket Guide to Chemical Hazards

Vinyl chloride

CAS 75-01-4

CH_2=CHCl

RTECS KU9625000

Synonyms & Trade Names
Chloroethene, Chloroethylene, Ethylene monochloride, Monochloroethene, Monochloroethylene, VC, Vinyl chloride monomer (VCM)

DOT ID & Guide
1086 116P

Exposure Limits

NIOSH REL: Ca See Appendix A

OSHA PEL: [1910.1017] TWA 1 ppm C 5 ppm [15-minute]

IDLH Ca [N.D.] See: IDLH INDEX

Conversion 1 ppm = 2.56 mg/m^3

Physical Description
Colorless gas or liquid (below 7°F) with a pleasant odor at high concentrations. [Note: Shipped as a liquefied compressed gas.]

MW: 62.5	BP: 7°F	FRZ: -256°F	Sol(77°F): 0.1%
VP: 3.3 atm	IP: 9.99 eV	RGasD: 2.21	
Fl.P: NA (Gas)	UEL: 33.0%	LEL: 3.6%	

Flammable Gas

Incompatibilities & Reactivities
Copper, oxidizers, aluminum, peroxides, iron, steel [Note: Polymerizes in air, sunlight, or heat unless stabilized by inhibitors such as phenol. Attacks iron & steel in presence of moisture.]

Measurement Methods
NIOSH 1007; OSHA 4, 75
See: NMAM or OSHA Methods

Personal Protection & Sanitation
Skin: Frostbite
Eyes: Frostbite
Wash skin: No recommendation
Remove: When wet (flammable)
Change: No recommendation
Provide: Frostbite

First Aid (See procedures)
Eye: Frostbite
Skin: Frostbite
Breathing: Respiratory support

Important additional information about respirator selection
Respirator Recommendations NIOSH
At concentrations above the NIOSH REL, or where there is no REL, at any detectable concentration: (APF = 10,000) Any self-contained breathing apparatus that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode/(APF = 10,000) Any supplied-air respirator that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode in combination with an auxiliary self-contained positive-pressure breathing apparatus
Escape: (APF = 50) Any air-purifying, full-facepiece respirator (gas mask) with a chin-style, front- or back-mounted canister providing protection against the compound of concern/Any appropriate escape-type, self-contained breathing apparatus

Exposure Routes inhalation, skin, and/or eye contact (liquid)

Symptoms Lassitude (weakness, exhaustion); abdominal pain, gastrointestinal bleeding; enlarged liver; pallor or cyanosis of extremities; liquid: frostbite; [potential occupational carcinogen]

Target Organs Liver, central nervous system, blood, respiratory system, lymphatic system

Cancer Site [liver cancer]

See also: INTRODUCTION See ICSC CARD: 0082 See MEDICAL TESTS: 0241

NIOSH Pocket Guide to Chemical Hazards

m-Xylene	**CAS** 108-38-3
$C_6H_4(CH_3)_2$	**RTECS** ZE2275000
Synonyms & Trade Names 1,3-Dimethylbenzene; meta-Xylene; m-Xylol	**DOT ID & Guide** 1307 130

Exposure Limits	NIOSH REL: TWA 100 ppm (435 mg/m^3) ST 150 ppm (655 mg/m^3)
	OSHA PEL†: TWA 100 ppm (435 mg/m^3)

IDLH 900 ppm See: 95476	**Conversion** 1 ppm = 4.34 mg/m^3

Physical Description
Colorless liquid with an aromatic odor.

MW: 106.2	BP: 282°F	FRZ: -54°F	Sol: Slight
VP: 9 mmHg	IP: 8.56 eV		Sp.Gr: 0.86
Fl.P: 82°F	UEL: 7.0%	LEL: 1.1%	

Class IC Flammable Liquid: Fl.P. at or above 73°F and below 100°F.

Incompatibilities & Reactivities
Strong oxidizers, strong acids

Measurement Methods
NIOSH 1501, 3800; OSHA 1002
See: NMAM or OSHA Methods

Personal Protection & Sanitation Skin: Prevent skin contact Eyes: Prevent eye contact Wash skin: When contaminated Remove: When wet (flammable) Change: No recommendation	**First Aid** (See procedures) Eye: Irrigate immediately Skin: Soap wash promptly Breathing: Respiratory support Swallow: Medical attention immediately

Important additional information about respirator selection
Respirator Recommendations NIOSH/OSHA
Up to 900 ppm: (APF = 10) Any chemical cartridge respirator with organic vapor cartridge(s)*/(APF = 25) Any powered, air-purifying respirator with organic vapor cartridge(s)*/(APF = 10) Any supplied-air respirator*/(APF = 50) Any self-contained breathing apparatus with a full facepiece
Emergency or planned entry into unknown concentrations or IDLH conditions: (APF = 10,000) Any self-contained breathing apparatus that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode/(APF = 10,000) Any supplied-air respirator that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode in combination with an auxiliary self-contained positive-pressure breathing apparatus
Escape: (APF = 50) Any air-purifying, full-facepiece respirator (gas mask) with a chin-style, front- or back-mounted organic vapor canister/Any appropriate escape-type, self-contained breathing apparatus

Exposure Routes inhalation, skin absorption, ingestion, skin and/or eye contact

Symptoms Irritation eyes, skin, nose, throat; dizziness, excitement, drowsiness, incoordination, staggering gait; corneal vacuolization; anorexia, nausea, vomiting, abdominal pain; dermatitis

Target Organs Eyes, skin, respiratory system, central nervous system, gastrointestinal tract, blood, liver, kidneys

See also: INTRODUCTION See ICSC CARD: 0085 See MEDICAL TESTS: 0243